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POPULAR PHOTOGRAPHY



BEARS:
HOW TO CAPTURE
GRIZZLY PICS
...AND SURVIVE

HOW TO MAKE GREAT PICTURES

Everyday Photos

+ Mobile
Perfection

Simple steps for
fixing photos
anywhere

36 Easy
tips
for catching
life's little
moments



State Fairs

A creative pro
shares the fun

FULL TESTS

FUJIFILM
X-T10

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SONY
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Pentax645Z

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"I love to find the heroic in my subjects; I like my photos larger than life and richly detailed."

Kate Turning



ImageMaker KATE TURNING

Assignments and fine art projects have taken Kate as far as Tahiti, Japan, Hong Kong, India, Europe and Saudi Arabia. She has created unique and lyrical imagery for clients from pop stars to major ad campaigns. She orchestrates her photographs like frothy Rossini bonbons, bursting with detailed embellishment and an ever-present sense of fun and imagination.

Her deep love of painting in all its forms from the Old Masters to Pop Surrealism, can be seen in her bold use of color and innovative lighting.

The image: PENTAX 645Z camera and the HD PENTAX D FA 645 MACRO 90mm Lens F2.8 ED AW SR.

Camera Setting f16 at 1/125 Sec, ISO 100

The concept: "As soon as I saw our model in this frothy creation, the shot was going to be all about line and texture."

Contact Kate for her thoughts: studio@turningpix.com or to see more of her work go to: turningpix.com



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CONTENTS

SEPTEMBER 2015 VOLUME 79, NO. 9

FEATURES

48 Grizzly Glory

Famed nature photographer Tom Mangelsen shares his best practices for capturing dramatic images of one of the outdoors' most fascinating creatures: the grizzly bear.

By Jack Crager

60 Better Everyday

Most of us take snapshots almost daily, but how good are they? We spoke with three professional shooters who document their lives in awesome snaps. They tell you how.

By Peter Kolonia

54 Star Values

To get the picture, you need the gear. Whether you're exploring a new genre or just want to conserve funds, here are some of the year's best deals to round out your kit.

By Debbie Grossman



COVERS: PASCAL SHIRLEY (FAMILY); BRIAN KLUTCH (CAMERA); TOM MANGELSEN (BEAR); THIS PAGE: PRESTON UTLEY (GIRAFFE); PASCAL SHIRLEY (COUPLE); LUCY SCHAEFFER (CHILD); TOM MANGELSEN (BEARS); BRIAN KLUTCH (GEAR).

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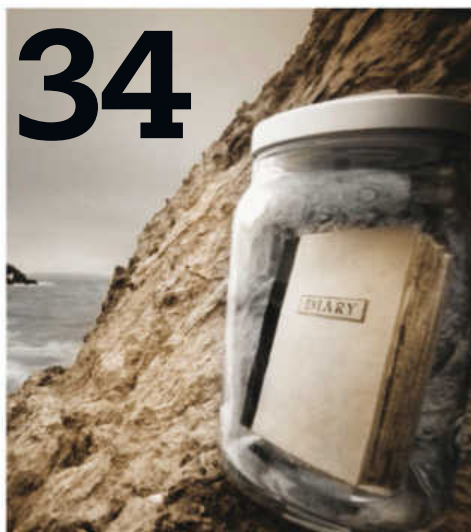
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Featured Photo By Chris Burkard

*on select Slik Tripods - Ends 08/31/15



DEPARTMENTS

NEXT

14 Just Out A round-bodied Olympus, pint-size GoPro, fast Tokina zoom, and more.

16 Closer Look Panasonic's Lumix GX8 leads the Micro Four Thirds pack in pixels.

18 Roundup Guess what? While you were out, selfie sticks got smarter!

SHARE

22 My Project David Bowman has a thing for the annual Minnesota State Fair. And that's a good thing.

24 Photo Challenge Our winner prevailed using the three P's of photography: planning, patience, and persistence.

26 Mentor Series This month's trekker found childhood innocence in the middle of Venice's madcap Carnevale.

27 Your Turn Readers hold court on photo abbreviations, reasons to follow the evolution of photo gear, and more.

28 Your Best Shot Our competition winners put something wet front and center.

HOW

34 You Can Do It Add an authentic antique patina to your photos by shooting with a pinhole camera.

36 Tips & Tricks Capture a touch of the supernatural, blend it better in Photoshop, and check out this photo primer.

38 Traveling Photographer Discover what Martha's Vineyard has to offer photographers in the off-season.

40 Software Workshop Learn how and why to link Adobe Photoshop Lightroom's desktop and mobile versions.

44 Lighting Give a new look to your portraits using light from circular tubes.

LAB

66 ILC Test FUJIFILM XT10
The second X-T camera from Fujifilm feels like a classic and shoots like one, too.

70 Lens Test FUJIFILM FUJINON XF 16mm F/1.4 R WR A super-fast, weather-sealed ultra-wide shows why X is for Excellent.

74 Compact Test SONY CYBERSHOT RX100 IV With the industry's first "stacked" CMOS, this mini is 16-fps fast!

80 Lens Test TOKINA AT-X 11-20mm F/2.8 PRO X Tokina strikes again with another crazy good wide-angle zoom.

DON'T MISS . . .

8 EDITOR'S LETTER

12 SHOWCASE

82 TIME EXPOSURE

86 BACKSTORY

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PETER HURLEY

Tool Time

In the week between our most recent issue coming out and my writing this column, I received dozens of email missives from you. The vast majority not only cheered our newsstand

cover experiment, but also encouraged us to emphasize photographic technique over equipment throughout the magazine.

So you may be surprised to see six pages in our feature well, starting on page 54, devoted to identifying the year's best gear deals. While this might appear to go against your wishes, we think of this annual roundup as a way to encourage you to extend your photography in new directions without having to invest heavily in the tools needed to get you there. That's one reason we characterized these bargains by their end use—the genre of imagery you want to create. For instance, have you ever wanted to try shooting the sort of exacting and detailed still lifes that studio pro Brian Klutch created to enliven this article? A geared tripod head will make the job easier by giving you precise and replicable control over your camera position.

Some techniques are indistinguishable from the tools needed to pursue them. Take classic pinhole photography, for instance. Artist and teacher Seán Duggan opens our HOW section on page 34, in our long-running You Can Do It department, with an evocative pinhole picture and an explanation of how he got the shot. Although you can buy a pinhole camera or a pinhole “lens” for your digital body, you can also make your own pinhole camera out of a cardboard box.

As you may notice when you flip to that story, which has moved up to open the HOW pages, we've refreshed our four major sections and added some new types of content to the mix. In NEXT (page 14), we give you just a few salient points about each month's hottest new products, then single out one item for a Closer Look (page 16). In either case, you'll find much more complete news, often with hands-on previews, sample image galleries, and more on PopPhoto.com. We also added a brief calendar (page 18) of the month's most compelling photography exhibitions and books. Want more detail? Check out our sister site, AmericanPhotoMag.com, for image galleries, critical reviews, and interviews with top photographers and curators.

I hope you enjoy and learn from what you find!

Miriam Leuchter



NEWSSTAND Brian Klutch gave the Fujifilm X-T10 (page 66) and Vanguard Alta Pro 284 CF tripod and ballhead (page 54) the star treatment.

NEWSSTAND/SUBSCRIBER Catching the “in-between” moments is one of Pascal Shirley's many tricks for great snapshots. We altered his photo for the cover—see the original on page 62.

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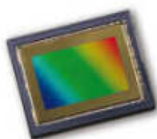
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As one of the most dynamic destinations in all of Africa, Tanzania is rich in culture, history and adventure. Traveling with Nikon professional photographers Reed Hoffmann and Bob Smith, this Mentor Series trek will take you on an unprecedented photo exploration full of wildlife, fascinating people, and stunning backdrops.

Lake Manyara, is a scenic gem with a setting extolled by Ernest Hemingway as “the loveliest I had seen in Africa.” Large buffalo, wildebeest and zebra herds congregate on these grassy plains, as do giraffes, and the expanse of lush jungle-like forest contrasts with the grassy valley.

Of course, any trip to Northern Tanzania includes a visit to the Ngorongoro Crater, one of the most beautiful, natural wildlife

safari sites in the world. The Ngorongoro Crater is also an exceptional place to interact with people from the Maasai tribe. Famous for their authentic culture, this tribe has always been special and well-preserved.

The Serengeti, Tanzania’s oldest and most popular national park, is a world heritage site and recently proclaimed a 7th world wide wonder. It is famed for its annual migration, when about six million hooves pound the open plains, as more than 200,000 zebra and 300,000 Thomson’s gazelle join the wildebeest’s trek for fresh grazing.

Known as one of the best safari locations in Africa, Tanzania is a Mentor Series destination that shouldn’t be missed.

Sign up today!

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REED HOFFMANN

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- Using flash creatively
- Editing techniques



BOB SMITH

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- Photography of the West
- Digital image processing

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F/4G ED VR**



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IMAGE FOR A CAUSE

Photographing for humanitarian groups in strife-torn areas of Africa means daily exposure to heartache. In June 2015, Juozas Cernius, a Canadian documentarian working for the International Federation of Red Cross and Red Crescent Societies, encountered this child among 800 displaced Muslims sheltered from sectarian violence in a Central African Republic mosque. "Despite the risks of everyday life there, I was touched by the friendly and resilient spirit I met," he recalls. His environmental portrait conveys a sense of an individual life behind the grim statistics.

NEXT

The Latest
Lumix ILC P.16

Special Selfie
Sticks P.18

September's
Photo Books
and Shows P.18

THE HOTTEST NEW STUFF AND THE TECH TRENDS BEHIND IT

JUST OUT

TOP TOOLS

Round-Body Cam ▶

OLYMPUS AIR A01

Not just a lens, the Air A01 from Olympus is actually a 16MP Micro Four Thirds camera that lets you use your smartphone as a viewfinder and control panel. Its mount accepts any MFT-system glass. **\$299, street, body only; \$499 with 14-42mm f/3.5-5.6 lens; getolympus.com**

Shrunken Hero ▼

GOPRO HERO4 SESSION

If a regular GoPro takes up too much space, try this waterproof cube. GoPro halved the size of its action camera and cut its weight by 40 percent. Video tops out at 1080p at 60 fps, not 4K, and most controls must be done by phone. **\$399, street; gopro.com**



NEW
TO U.S.

Grand Master Flash ▶

CANON SPEEDLITE 430EX III-RT

A built-in radio trigger on this TTL flash makes it easy to command a fleet of remote units, even when out of sight of the master. Canon also sped up the recycle time and gave this update a zoom range of 24-105mm.

\$300, street; usa.canon.com





Utility Player ▲

NIKON AF-S DX NIKKOR 16-80MM F/2.8-4E ED VR

Covering a wide-to-telephoto range, this DX-format lens is made for Nikon's APS-C-sensor bodies, on which it spans a familiar full-frame equivalent of 24–120mm. Vibration Reduction, fast apertures, and a smudge-resistant coating add to the appeal.

\$1,069, street; nikonusa.com



Value Proposition ▲

TOKINA AT-X 24-70MM F/2.8 PRO FX

This fast zoom for full-frame Canon and Nikon DSLRs goes from a wide to moderate tele—a standard range many pros swear by but usually pay a lot for. One cool touch: the focus ring slides forward and back to take you between manual and auto.

\$999, street; kenkotokinausa.com



Memory Aid ▲

SANDISK CONNECT WIRELESS STICK

Expand your mobile photo and video collection with this little Wi-Fi drive, available in 16GB to 128GB capacities. SanDisk's Connect app for Android and iOS not only lets you keep snapping longer, it lets you share files among multiple devices simultaneously. **\$29 to \$99, street; sandisk.com**



TOUGH SHELL

Workhorse Pack ▲

THINK TANK TRIFECTA 10 DSLR BACKPACK

Made to fit a big full-frame camera with a 70–200mm f/2.8 zoom attached, plus a couple of other lenses and a 10-inch tablet, this long but low-profile bag works for photojournalists and travelers alike. A tripod-holder attachment is included.

\$160, street; thinktankphoto.com

F.Y.I.

FUJIFILM ANNOUNCED a 20% price hike on many popular emulsions (including Velvia50 and Provia100F) starting in October and will discontinue Provia100X in December.

LYTRO UPDATED the firmware for its Illum lightfield camera to let you change an image's focus plane, perspective, and depth of field in the camera after shooting.

NIKON ISSUED a service advisory on its D750 as the shutters on some units have created shading in images. Check your serial number at support.nikonusa.com/app/_D750/sn.

CANON WARNED that it has found fake Speedlight 600EX RT flash units for sale online, so make sure you buy only from a reputable dealer.

THE LOWDOWN

WHEN INSTAGRAM announced this summer that it is raising the resolution of its photos to 1080x1080 pixels to look better on new mobile devices, not everyone was thrilled. Copyright watchdogs warned photographers that the larger file size may make your images that much more appealing to picture pirates.



PUSHING PIXELS

The highest count of any Micro Four Thirds body

FOLLOWING ON the heels of the GX7—Panasonic's top rangefinder-style body, which it replaces—the new Lumix DMC-GX8 (\$1,198, street, body only) ups the ante in terms of pixel count, while adding Dual Image Stabilizer and 4K video and stills capture.

The jump to 20.3MP from 16MP brings the Micro Four Thirds format into new territory and should help the format remain relevant as the full-frame world pushes its pixel count as high as 50MP. Dual I.S. combines lens- and sensor-based stabilization (you had to choose between them on the GX7).

Built on a rugged magnesium-alloy chassis, the weather-sealed

STANDOUT SPECS

SENSOR: 20.3 MP LiveMOS Four Thirds

SENSITIVITY: ISO 100–25,600

SHUTTER SPEEDS: 1–1/16,000 sec; bulb

MONITOR: Articulating 3-inch, 1,040,000-dot OLED touchscreen

VIEWFINDER: 2,360,000-dot OLED EVF

BURST SPEED: 8 fps; 6 fps with full AF

HIGHEST-RES VIDEO CAPTURE: 3840x2160/30p (4K); 1920x1080/60p (Full HD)

body has an articulating OLED touchscreen and OLED electronic viewfinder with 0.77X (35mm equivalent) magnification. A quad-core CPU powers the Venus Engine processor. Burst shooting tops out at 8 frames per second with focus locked after the first frame, or a still-impressive 6 fps with full continuous autofocus. The buffer allows more than 100 JPEGs or 30 RAW shots per burst.

Video capture tops out at 3840x2160 (4K) at 30 fps in MP4 format, or 1920x1080 at 60

fps, which adds an option for AVCHD. You can send footage to an external recorder using the camera's HDMI port, but you can't record to the SD card at the same time. The built-in stereo microphone uses Panasonic's wind-cut feature to battle noise; there's also a 2.5mm microphone input. As with most recent Lumix models, the 4K stills mode lets you pull 3840x2160-pixel frames out of your video footage.

We can't wait to put the new GX8 to the test. —Philip Ryan





Photo © 2015 Bill Fortney | FUJIFILM X-T1 Camera and XF18-55mmF2.8-4 R LM OIS lens, at 1/20 sec at F/13, ISO 1250.

Inspiring places can fuel a **Passion...**



"I am celebrating my 46th year as a professional photographer. I have fallen in love with the incredible Fujifilm X-Series. Being an "old school" guy, I love the retro controls. Fujifilm has always been a master of color reproduction and the X-Series captures that look and feel with its cameras and drop dead gorgeous lenses. Fujifilm X-Series has brought back the joy and excitement to my photography! "

-Bill Fortney



X-T10

X-T1

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EXTEND YOUR REACH

LIGHTER THAN traditional monopods and usually equipped with adjustable brackets to hold smartphones, selfie sticks give mobile photographers not just a more flattering perspective for self-portraits but an easier way to shoot at odd angles. Some will let you mount an action camera or other compact—use your phone or tablet as a remote viewfinder and control via Wi-Fi. Here are five standouts.



NOT JUST FOR SELF-PORTRAITS
Think of these sticks as light monopods you can use to get a hard-to-reach angle with a phone, action cam, or compact. All but one has a socket to let you mount it on another 'pod.

1 Looq DG \$17 This well-made bargain uses a wired trigger to snap a picture using an app for Android and iOS devices. It telescopes from 8.2 to 41.7 inches and holds phones up to 3.35 inches. **HOT:** Battery-free. **NOT:** No wireless control options. looqsystem.com

2 Revo Action Cam Self Shooting Pole \$25
A padded grip makes it comfortable to hold. With a 1/4-20 screw mount for cameras, it also accepts GoPro mounts and includes a smartphone holder. **HOT:** Tripod socket on the handle lets you add it to another support. **NOT:** No wired or wireless control for your phone. revocinegear.com

3 DiCAPac Floating Selfie Stick \$30
Go swimming with this waterproof stick that will return to the surface if you let it go. (No waterproof camera? Spend an extra \$20 for a kit that includes an underwater smartphone case.) Uses Bluetooth 4.0 to trigger. **HOT:** Holds up to 4.4 lb. **NOT:** Complicated operation. dicapacusa.com

4 iBower High-Impact Selfie Stick \$40
Big and solid-feeling, this Bluetooth stick has a 1/4-20 screw mount for cameras, a GoPro adapter, and a robust spring-loaded holder for smartphones. It comes with a MicroUSB charger. **HOT:** Can control older phones. **NOT:** Collapsed, it's 15 inches long. bowerusa.com

5 Nikon N-MP001 \$59 Made for compact cameras weighing up to 0.88 lb, so you'll need to rustle up an adapter for the traditional 1/4-20 screw mount to use it with your smartphone. There's no built-in remote camera control, either. **HOT:** Collapses to only 7.28 inches long for portability. **NOT:** Reaches just 28.54 inches when extended. nikonusa.com

SEPTEMBER CALENDAR HAPPENINGS IN THE WORLD OF PHOTOGRAPHY

1st
A History of Photography in 50 Cameras
by Michael Pritchard
(Firefly Books, \$30); published September 1



10th
Photoville, a free photography festival
held in Brooklyn Bridge Park, Brooklyn, NY, Sept. 10–20

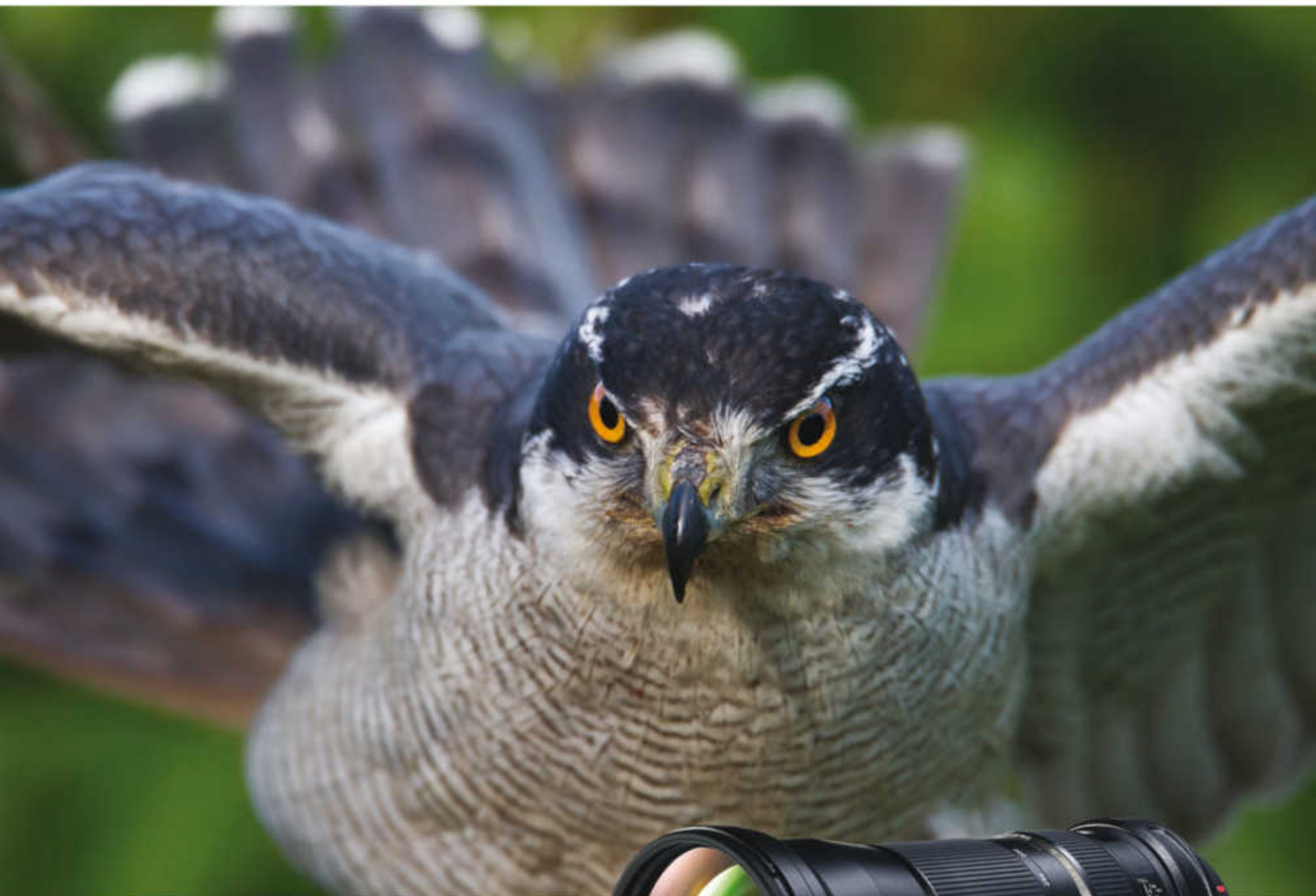
13th ▶
Perfect Likeness: Photography and Composition, Hammer Museum at UCLA, Los Angeles, through Sept. 13



CANON EXPO 2015 NEW YORK
10th
Canon Expo 2015 New York
(expo2015ny.com) shows off Canon's newest tech, Sept. 10–11

27th
In Passing: American Landscape Photography at the SCAD Museum of Art, Savannah, GA, through September 27

29th
Rochester 585/716: Postcards from America Project, by Magnum photographers (Aperture, \$75); out Sept. 29



Focal length: 600mm Exposure: F/7.1 1/640 sec ISO800 © Hiroto Fukuda



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Chinatown, San Francisco, California

ON ASSIGNMENT WITH THE EXCEPTIONAL NEW NIKON D7200

Vincent Versace Falls In Love With Nikon's Top DX DSLR

An internationally renowned pioneer in the art and science of digital photography, Vincent Versace is a Nikon Ambassador, and one of the world's top photographic artists and visual storytellers. He's garnered countless accolades, including the Computerworld Smithsonian Award in Media Arts & Entertainment and the Shellenberg fine art award. His work has appeared in dozens of prestigious publications. And the National Association of Photoshop Professionals has named its coveted Award for Digital Photography Excellence "The Vinnie" in his honor.

"I was visiting family in San Francisco when I got the assignment to check out the Nikon D7200," recalls Versace. "So I immediately mounted my go-to lens, the versatile AF-S NIKKOR 28-300mm f/3.5-5.6G ED VR, and shot one of my favorite subjects,

the Golden Gate Bridge. Once I saw the awesome results, I decided the best way to showcase the D7200 was to treat it exactly like my pro-caliber full-frame Nikon cameras.

I didn't use Speedlights, LED lights or light modifiers, but shot entirely by available light, creating a portfolio of professional assignments and personal 'happy snaps.' I wanted to make this a real world test rather than an ad campaign, to see what happens when a real pro uses Nikon's top-of-the-line DX-format enthusiast camera on real professional assignments. By a stroke of luck I had the chance to shoot publicity pictures of a famous actor friend, plus additional pro assignments."

"The extraordinary performance of the Nikon D7200 is due to its unusually high-end specs," says Versace. "It has a hi-res 24.2MP DX-format

Golden Gate Bridge,
San Francisco, California



Half Dome, Yosemite National Park



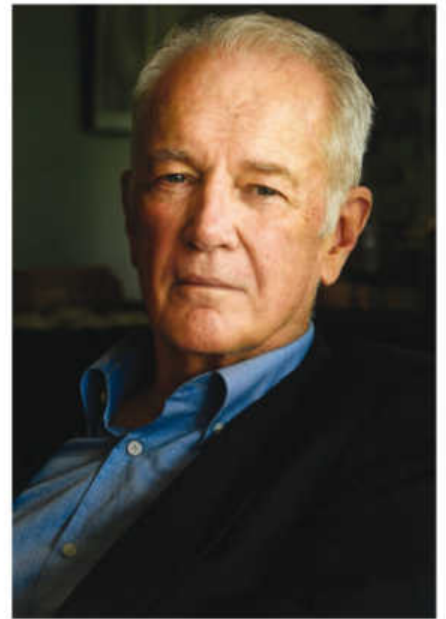
Golden Gate Bridge, San Francisco, California

CMOS sensor coupled to an advanced high-end EXPEED 4 image processor, and because it has no low-pass filter, it yields better, sharper images that capture more detail. Other cool features include a full-res burst rate of 6 frames per sec, an upgraded buffer capacity that lets you keep shooting 'at the speed of life', built-in Wi-Fi® and NFC* so you can shoot and upload images via your smart phone, an over-size 3.2-inch LCD that lets you evaluate detail and readouts more easily, and dual DX card slots.

The D7200 also lets you shoot at up to ISO 25600, and the camera yields such unbelievably clean, noise-free images at elevated ISOs I simply leave it on Auto ISO. I'm a master printer, and the D7200 and its 'magic' 24.2MP

DX sensor enable me to achieve gorgeous 44 x 36-inch prints, and my 28-300mm gets out to an effective 450mm by pulling out of the center of the field."

"Its compact, lightweight, ergonomic form factor makes the D7200 easy to carry and it's great for shooting on the go," says Versace. "Its responsiveness is awesome—it shoots at the same level of groove as my pro Nikon cameras. Essentially the Nikon D7200 is a pro caliber DX-format camera, and it's robust enough for professional use. I'm going to buy a Nikon D7200 as soon as I finish this assignment, and I can tell you truthfully I wasn't planning on doing that when I started. How's that for a testimonial!"



Actor, Bruce Gray

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DAVID BOWMAN/NAT GEO CREATIVE (1/4)

MY PROJECT

ALONG THE MIDWAY

A yearly pilgrimage, with camera, to the Minnesota State Fair

PHOTOGRAPHY, David Bowman says, is often about extremes: oceans, not lakes; mountains, not hills; sunsets, not noon. "It's always the best, the most

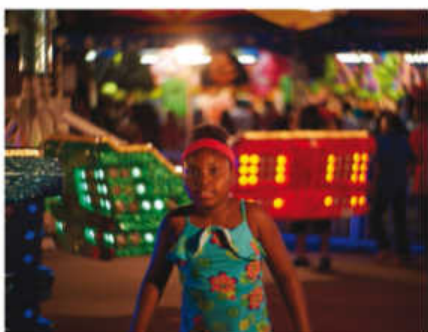
beautiful, the wildest," he continues. "But no one's ever like, 'Let's see what your backyard looks like.' The entire Midwest is like a backyard."

More specifically, Bowman's backyard. Born in Green Bay, Wisconsin, raised in Chicago, and now based in Minneapolis, this

pro photographer has balanced advertising and editorial work with projects that explore America's center. His large-format landscapes of the Great Lakes document the region's understated vitality and expanse, and he's also parked his Sinar P2 4x5-inch camera in 2008 on the



**David
Bowman**
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SELECTIONS FROM ELECTRIC AVENUE

Since first training a large-format studio camera on the midway at the Minnesota State Fair in 2008, Bowman has taken on more of a handheld “street” style for this work.

midway at the Minnesota State Fair. These photos capturing one of the state’s biggest and most beloved traditions launched Bowman’s ongoing, ever-changing series, *Electric Avenue*.

For years, Bowman had attended and photographed the fair, but his 4x5—outfitted with a Phase One P45+ digital back and a Phase One LightPhase

FlexAdapter for multiple captures—provided a fresh perspective. “Large-format allows the subject matter to come to life over time, instead of in that moment,” he says. These pictures mix crisp stillness and surreal swirls of movement shot with long exposures: The rides became brilliant spires and spirals of light, his crowds vibrant blurs.

His photos garnered acclaim and several awards, but as Bowman’s interests changed, so did *Electric Avenue*. In recent years, he has stalked the midway with a Nikon D800 and 85mm f/1.8 lens, shooting candid portraits of patrons and employees. These too appear in sharp focus amidst a fuzzy, light-stained background,



DAVID BOWMAN/NAT GEO CREATIVE (3)

recalling his large-format shots and the Midwest's unique hot summer nights.

Never one to repeat himself, Bowman will return to the fair this August with a fresh camera and inspiration. A recent trip to New York City got him giddy about classic street photography. He plans to bring the tradition—with a twist—to the Minnesota State Fair this year using a Nikon D810 and 24mm f/3.5D PC-E Nikkor tilt-shift lens.

Speaking about his development as a photographer, Bowman says, "Everything you do is cumulative. The longer you shoot, the older you get, the more experiences you have. You're not really switching one [shooting style] for another—it's more like you're building on top. Every picture you ever take is really never that far away." —**Jon Blistein**

SHARE PHOTO CHALLENGE BIRDS



CHUCK MURPHY

PHOTO HUNGRY

A well-timed nature shot snaps up first prize

CHUCK MURPHY is a photography enthusiast and retired computer software consultant in Athens, Georgia, who has truly mastered his hobby. Behind the lens for nearly five decades, Murphy now teaches photography at colleges and education centers around Georgia and still makes time to shoot for his own enjoyment.

His perfectly timed photo of the interaction between a male eastern bluebird and one of his chicks came easier thanks to the ideal environment Murphy has created in his backyard. "We have about 10 acres," he says, "and we have extensive organic flower and vegetable gardens, all designed to attract bees, butterflies, moths, bats, hummingbirds, and every other species of bird we can bring in."

In addition to these acres of critter snacks, Murphy also hung mealworm feeders at various locations with the aim of attracting bluebirds specifically. Since he knew where his feeders were positioned, he was able to predict the

best place to wait for this shot.

The bluebird buffet did the trick, and Murphy had his camera ready when the opportunity for this perfect shot arose. Since he kept careful track of the bluebirds on his property, he knew that the chicks had recently fledged and would be out and about. He focused his tripod-mounted 600mm f/4L Canon EF IS II USM lens (with 1.4X EF teleconverter) on a Canon EOS-1D X on the branch and waited for action. The sidelight from the morning sun proved a real bonus, adding contrast and dimensionality. "Success for this type of shooting depends on the three P's: planning, patience, persistence," he says.

Once he captured the moment he had been dreaming of, Murphy made some slight adjustments to his image using Adobe Photoshop Lightroom CC.

—**Sara Cravatts**

NEXT PHOTO CHALLENGE This month Seán Duggan gives his tips for pinhole photography on page 34. Show us your best pinhole shot by September 30 and you could win \$100 and your photo and story here. Read the rules at PopPhoto.com/contests.



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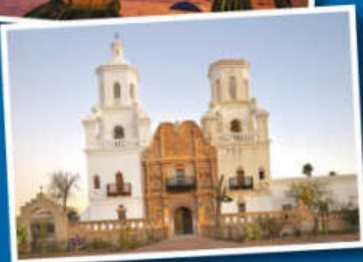
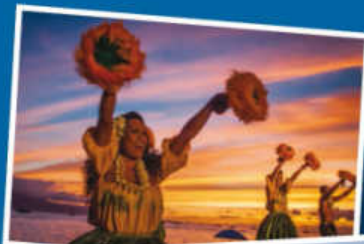
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SHARE MENTOR SERIES VENICE, ITALY



KELLY WIGGETT; BETH MACALARNEY (HEADSHOT)

IN THE MOMENT "I tried to capture the motion of the pigeons, the girl's calmness in the midst of a frenzy of photographers, and the enjoyment she obviously felt in feeding the birds," says Wiggett.

CHILD'S PLAY

Putting some action in Carnevale portraits

THE CARNEVALE excitement on Venice's famous Piazza San Marco was palpable in February 2015, when Kelly Wiggett and the rest of the Mentor Series crew joined hundreds of other photographers all angling to take home memorable photos of the festivities. "The piazza was flooded with masked individuals, groups, and various entertainers," she recalls. "This little girl caught my eye because in the middle of all the hoopla, she patiently just stood there happy to feed the pigeons and ignore the chaos going on around her!"

Wiggett, a field engineer for a major U.S. software company, wanted to capture a liveliness in her portraits of the child that would mirror the excitement of being in Venice at Carnevale's height. "I was waiting for something to actually happen when these pigeons flew up from the ground, lending the picture the added dimension of action," says this resident of Maryland's Eastern Shore. "It was worth waiting for, because I ultimately captured something more

than the statically posed masked figures that everyone else was getting."

Wiggett learned a lot on this travel workshop that also included stops in Croatia and Slovenia. "I decided that Venice would be a perfect opportunity to practice portraiture with my barely used 85mm f/1.8 prime," the photographer says. I was able to focus on faces and elaborate mask details while blurring out the noisy background that would normally really detract from my shots. It worked out beautifully and I learned to love that lens."

For this shooter, though, sometimes the photography on a Mentor Series workshop takes a back seat to the adventure itself. "I thoroughly enjoyed the people on this trek. In fact, I learned just as much from my fellow trekkers as I did from the mentors," says Wiggett.

—Peter Kolonia



**Kelly
Wiggett**

This engineer is
planning her sixth
trek—it's to India—
with Vietnam and
Africa to follow.

KEEP TALKING

The letter from Raul DaSilva in “Tech Talk” (Your Turn, July) has some merit for those of us newer to photography...I suggest that you put a glossary of terms and abbreviations (especially abbreviations!) in the magazine from time to time...

[But] I don't take up the cudgel that the writers are trying to impress each other with their expertise. Your magazine reaches a great number of proficient photographers who understand the technical “shorthand.” Should the writers explain each facet of the product as if the reader knew little or nothing about photography, the articles would be unnecessarily verbose.

Herb Shipp
Scottsdale, AZ

As an advanced amateur, I find the reports and discussions of all the photo gear interesting for several reasons. (1) Like any language, immersion compliments fluency. Photography is another language to learn to gain competency. (2) Your “right gear” settles upon you over time. Once that happens, extraneous information serves to hone your knowledge. The distraction factor lessens exponentially. (3) The more you read the better your chances of improving your skills.

John C. Nee
College Place, WA

“Add Some Snap” (Software Workshop, July) has some useful information. But, the geography for the photo is misplaced. The images show the Oxbow on the Snake River in Grand Teton National Park, not Yellowstone National Park.

Gary W. Graff
Ft. Thomas, KY

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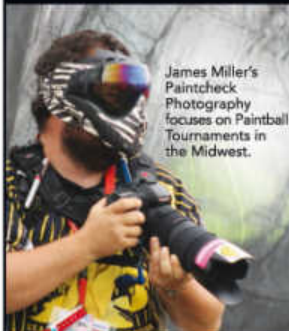
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B+W SAVED JAMES MILLER'S LENS

“To photograph the colorful exuberance of an Illinois Paintball tournament, James Miller stepped into the action with his Canon 7D and Tamron 70-200mm lens. As usual, mounted on front was a Schneider B+W F-Pro UV Haze filter because he knows its superior quality delivers outstanding images, while eliminating UV light and bringing the vivid Paintball colors into clarity. Thank goodness. A shot hit smack dab in the middle of his rig with a CRACK! But back on the sidelines James breathed easy as he threaded off the brass B+W filter ring. Despite the shattered filter, his lens was safe—no breaks, no scratches. With a new B+W, he's back in the game, confidently shooting all of the excitement of Paintball.”



James Miller's Paintcheck Photography focuses on Paintball Tournaments in the Midwest.



WET AND WILD

These glistening frames capture the beauty of water



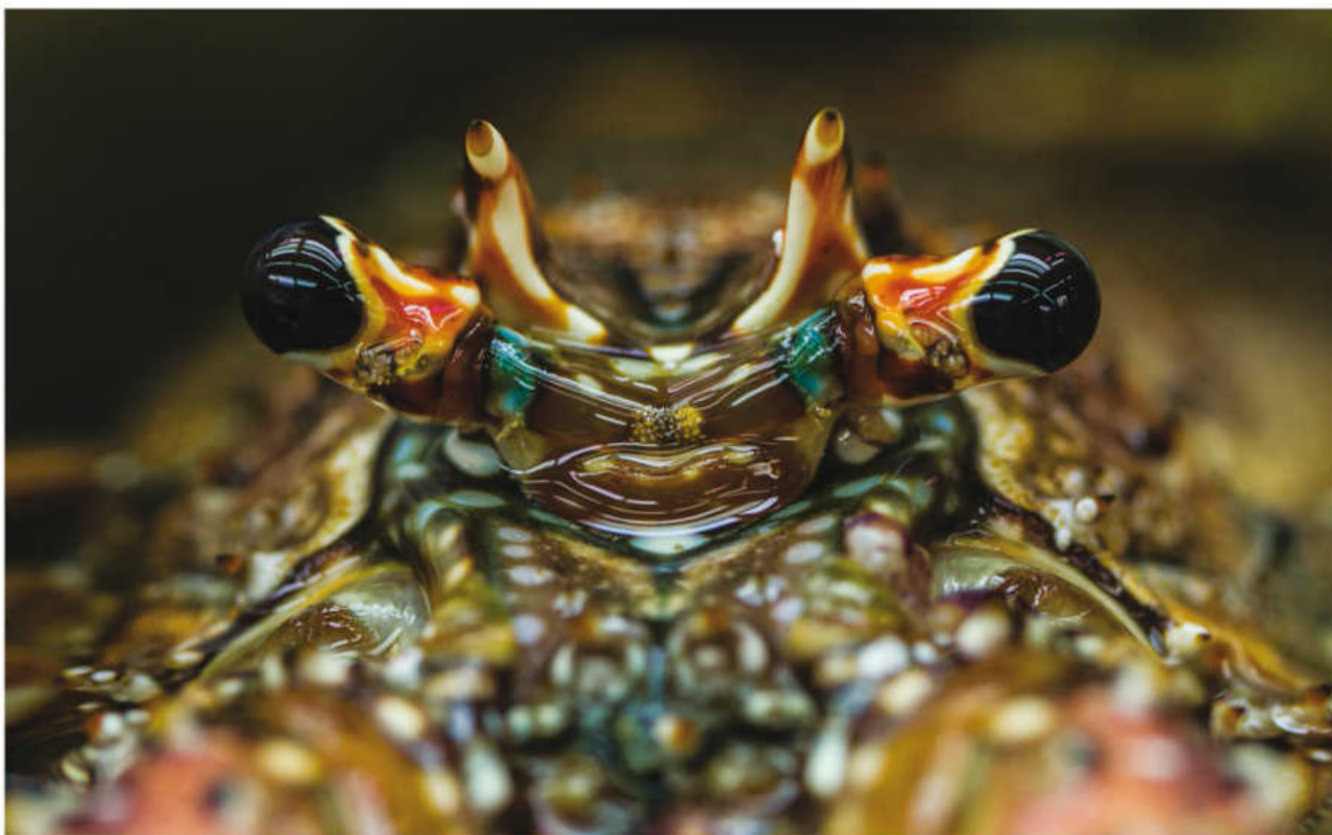
3rd Place \$100 Prize

MATTHEW CHEREKJIAN, 15, STUDENT, WAYNE, NJ

While on vacation right above a secluded St. Maarten beach, high-school student Matthew Cherekjian ventured to the shore in search of photographic inspiration. When he saw the way the waves were breaking on seaweed-covered rocks, he knew he had his shot. Using only natural light, Cherekjian framed the shot with the cliffs in the background and set his action camera to burst mode. **TECH INFO:** GoPro Hero4; exposure, 1/1155 sec at f/2.8, ISO 100.

2nd Place \$200 Prize

DAVID WALTMAN, 26, AUDIO TECHNICIAN, PRINCETON, NJ David Waltman had been in Japan for two months on a work trip when he purchased his first macro lens, scooping up a second-hand Canon EF 100mm f/2.8 macro. Determined to master macro photography technique, he was on the hunt for the perfect subject with which to get up close and personal. When he came upon a small seafood market in Okinawa, he knew that he would find something to shoot near at hand. "I wanted a macro photo of a creature's head that would fill the frame. With the idea in my head I ventured outside," he said. He found it in this lobster. Without a macro flash, he shot under ambient light—the fluorescents that lined the market. He then made adjustments to contrast and clarity in Adobe Photoshop Lightroom CC. **TECH INFO:** Canon EOS Rebel T2i with 100mm f/2.8 Canon EF USM macro lens; exposure, 1/100 sec at f/3.5, ISO 400. Basic adjustments in Lightroom CC.



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1st Place \$300 Prize

**JUANICE HARRIS,
58, STAY-AT-HOME
MOM, BOAZ, AL**

While watching her granddaughter Jerzi Harris stay cool in the Alabama heat, Juanice Harris noticed the beautiful effects that water could give a portrait, especially from overhead. With her idea in mind, Harris climbed up onto a ladder at the edge of the pool in order to give her angle some extra height, with lighting provided by sun and a hotshoe flash. She waited patiently for her granddaughter to swim to the surface and captured her at the perfect moment. Harris then edited in Lightroom and Photoshop CC, adding a texture overlay with Photoshop Elements.

TECH INFO: Canon EOS Rebel T3i with a 70–300mm f/4–5.6 Tamron SP lens at 300mm; exposure 1/200 sec at f/5.6, ISO 100. Edited in Lightroom, Photoshop CC, and Photoshop Elements 2.0.





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friendly smiles. Then we'll fly to Can Tho City, Vietnam's 'rice bowl' or the Mekong Delta, which is a rich, fertile region of flat farmland interlaced with thousands of waterways and tributaries of the mighty Mekong. The river provides a lifelong flurry of activity and is interspersed with seemingly endless rice fields, colorful floating markets, isolated villages accessed only by boat, and a populace of constantly smiling people.

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LIVING RELIC

Try a pinhole camera to bring back the past

TO ADD AN authentic antique patina to your photos, nothing beats a pinhole camera. Seán Duggan, a photographer, writer, and teacher from Grass Valley, California, specializes in this classic technique, which uses “light-tight boxes with pinholes through which light passes to expose sensitized film or enlarging paper within the box.”

They’re inexpensive to buy, and you can make your own for next to nothing using any light-tight container that you can puncture. You can also use a pinhole body cap mounted in place of a lens on a digital or film camera body. Or remove the lens from an older film camera and replace it with a square of aluminum about the thickness of a pie tin into which you’ve pricked a pinhole aperture.

Despite the antique technique, what feels new about Duggan’s *Artifacts of an Uncertain Origin* series, including the photo shown here, is how he drops evocative props into his scenes to suggest narratives.

—Peter Kolonia

Step 1

Buy or make a pinhole camera. The cleaner your pinhole, the sharper your pictures will be. To purchase a camera or pinhole “lens” for a digital camera, start with pinholeresource.com.

MYSTERY JAR From Seán Duggan’s *Artifacts of an Uncertain Origin*, this San Francisco seascape was exposed for about 8 sec at f/250, ISO 400.

SEÁN DUGGAN, SEANDUGGAN.COM

Step 2

Scout locations. Since pinhole apertures are tiny, they net great depth of field. (The aperture in Duggan’s Zerolmage camera is f/250!) Pick landscapes with compelling fore-, middle- and backgrounds. Remember that such small apertures mean very long exposures—anything moving will blur.

Step 3

Determine exposure. Before you begin shooting in earnest, Duggan says, “especially for homemade cameras, test to find good starting exposures for full sun, overcast skies, and interior scenes.” His “shutter speeds” typically range from a few seconds to 8 minutes. For store-bought cameras with known apertures, you can often interpolate a starting exposure by metering.

Step 4

Shoot your images. Simply remove the pinhole blind and allow light to strike the film or sensor. Bracket exposures by varying the amount of time the pinhole allows light into the camera. Duggan also moves his camera slightly between brackets to give him a variety of compositions from which to choose.

Final Step

Process the images. This will differ depending on the light-sensitive material or sensor you’re using. Duggan exposes his landscapes on Kodak Tri-X film in the 120 format. “I develop the negatives, review the shots, and choose ones to work on. Then I make low-resolution scans of my selects to further refine my choice. For my final shots, I make a high-res scan big enough for 30x40-inch prints and then apply image improvements in Adobe Photoshop,” he explains.

THE GEAR

1 ZEROIMAGE PINHOLE CAMERA Made of teak, they’re available in sizes from 35mm to 8x10 inches through zeroimage.com from **\$131, direct.**

2 KODAK TRI-X 120 FORMAT B&W FILM Duggan’s Zerolmage camera accepts 120 film. **\$4.85, street.** You can also expose pinhole images on enlarging paper and digital sensors.

3 JOBY GORILLAPOD Available in a variety of sizes with many accessories, Gorilla-Pods start at **\$13, street.**





ELISABETH CAREN

GHOST TALE

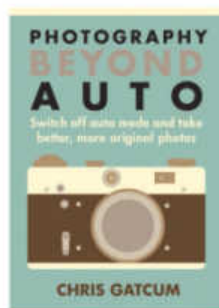
Create a sense of mystery in your photos

ON AN ASSIGNMENT in New York, Elisabeth Caren, a celebrity shooter from Los Angeles, was photographing an actor in a hotel room when he stepped behind a glass partition, turned, and touched its frosted surface. She snapped the shutter and noticed how the scene suggested someone reaching out from another dimension. “Typically, I don’t want grain in my photos, but in

this case shooting at ISO 1600 produced grain that helped create an air of mystery. I really liked it,” she says.

To evoke the otherworldly in a picture, you don’t necessarily need frosted glass. Just avoid clutter and anything that dates or gives a specific context for the image, and shoot at wide apertures to throw fore- and backgrounds out of focus. Try using a soft-focus filter on your lens. And convert your image to monochrome afterward.

— Peter Kolonia



BY THE BOOK

PHOTOGRAPHY BEYOND AUTO
by Chris Gatum (Ilex Press, 2015)

FOR FLEDGLING photographers who need handholding, this covers almost all the basics (manual exposure, histograms, and more) in plain language. Typical is the excellent section on white balance presets, which tells you how to use them not just to get realistic color but for more artistic ends. One trick: To accurately capture Golden Hour lighting, the Cloudy setting works best, even when skies are clear.

ESSENTIALS

BLEND MODES

Change a layer’s blend mode in Adobe Photoshop to change the way it relates to the layers below. This can subtly—or radically—change the way your image looks. Duplicate your background layer, then try these three favorites of ours, adjusting opacity as necessary.

Screen: Produces a lighter image while retaining maximum blacks. Use it to bring out shadow detail.

Multiply: Creates a darker image, but whites remain white. Use it to darken light objects on white backgrounds.

Color Burn: Increases color contrast between layers. Whites are unaffected; use it to add saturation to landscapes but keep clouds bright.

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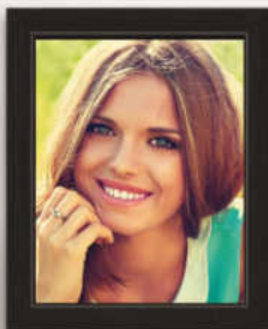
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ELIZABETH CECIL/ELIZABETHCECIL.COM

MORE THAN OCEAN VIEWS

ITS SEASCAPES ARE THE MAIN DRAW, BUT THERE'S MUCH MORE TO THE VINEYARD.

THE FLYING HORSES

CAROUSEL 15 LAKE AVENUE, OAK BLUFFS The oldest platform carousel in the country was built in 1876 and designated a national landmark in 1987. Originally installed at New York's Coney Island, this colorful background for family portraits moved to the Vineyard in 1884. Hours in September: 11:30 a.m. to 4:30 p.m., weekends only. Info: (508) 693-9481

GAY HEAD CLIFFS

AQUINNAH AND MOSHUP BEACHES

These steep clay cliffs ignite with color in late-afternoon light; they are best seen from the beach below. To control erosion, climbing on them or even touching the clay is forbidden. Portions of the beach are clothing-optional; don't point your camera at the sunbathers. Parking fees.

GINGERBREAD COTTAGES

BEHIND CIRCUIT AVE., OAK BLUFFS

Built in the mid-1800s to replace tents as housing for the Methodist "camp meeting" that took place each summer, these colorful and ornately filigreed cottages represent a unique architectural form known as the "Martha's Vineyard" cottage. The 318 privately owned cottages are an island icon. Info: mvcma.org/history

MARTHA'S VINEYARD

WIND FESTIVAL

OCEAN PARK, OAK BLUFFS

This annual event offers an all-day schedule of kite making and flying in one of the island's prettiest parks. September 5, 10:30 a.m. to dusk. Info: mvsindfestival.com

MYTOI JAPANESE GARDENS

DIKE ROAD, CHAPPAQUIDDICK

Take the ferry to Chappaquiddick Island and explore this 14-acre Japanese garden, with trails that take you through a birch grove, camelia dell, hillside garden, and a pitch pine forest. Parking is limited, so go early or bike; it's three miles from the ferry. Info: (508) 627-7689

ISLAND HIGH

See this storied isle without the summer madness

SEPTEMBER IS a great month to explore Martha's Vineyard, says photographer Elizabeth Cecil, who moved to the island full-time in 2007. "The summer crowds dissipate and it's still warm, but the humidity has lifted and the air is clear and crisp." Surrounded by ocean, she adds, this island off of Cape Cod, Massachusetts, features a continuously changing landscape. "I can go to the same spot and make pictures over and over, but they're always different."

One of her favorite haunts is Joseph Sylvia State Beach on Beach Road between Oak Bluffs and Edgartown. "It's a magical two-mile stretch with water on both sides," she says. "And it's a public beach, so it's accessible to everyone." On any given day, you'll find people jumping off of the infamous *Jaws* bridge (shown in Cecil's photo here) despite the signs forbidding it.

Long Point Preserve in West Tisbury—the locals call that area

"up island"—is a favorite of local photographer Michael Blanchard (michaelblanchard.com). "It's a flat coastal preserve characterized by ocean, pond, marshes, and wildlife, including an occasional bald eagle and other shore birds," he says. "Sit quietly just after sunset and wait for the swans to make their nightly migration from the adjacent coastal ponds to this tidal marsh."

The three miles of walking trails at Menemsha Hills Reservation off North Road in Chillmark offer dramatic coastal views from the highest points on the island, says Blanchard. "Bring a wide-angle lens to take in the beauty of the Great Sand Bank, whose cliffs and dunes drop dramatically. Sunsets are always amazing."

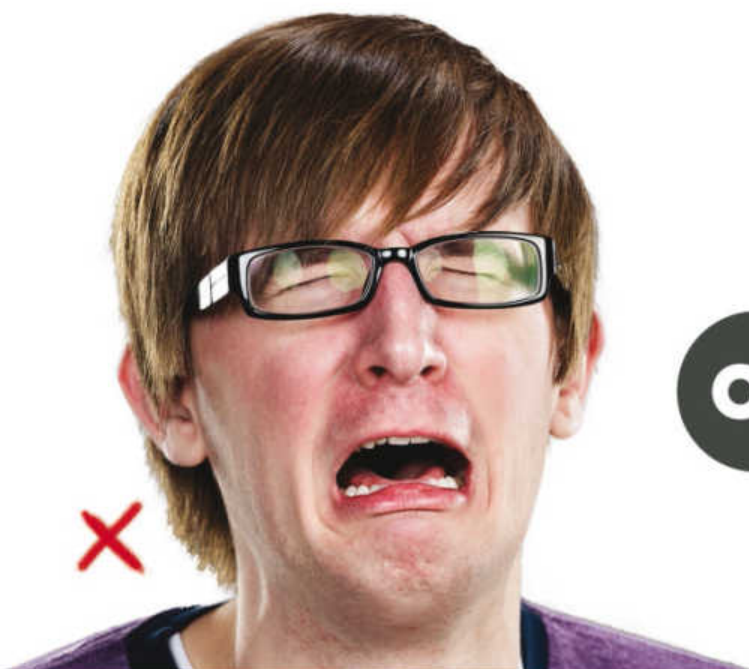
For a glimpse of traditional island life, Cecil suggests the picture-perfect fishing village of Menemsha at the southwestern end of the island. "It's fun to photograph at almost any time," she says. Go early to catch the fishermen sailing out and return at day's end because west-facing Menemsha is the primo spot for sunsets on the island. —Jeff Wignall

BRIDGE BETWEEN EDGARTOWN AND OAK BLUFFS

Elizabeth Cecil caught the action on this bridge made famous by the movie *Jaws*. She used a Canon EOS 5D Mark II and 50mm f/1.2L Canon EF USM lens, exposing for 1/164 sec at f/6.3, ISO 200.

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PHOTOS TO GO

How to sync Lightroom's desktop and mobile versions

IF YOU PREFER editing your photos away from your desk—or just want to see your favorite pictures end up on your mobile device—Adobe Photoshop Lightroom CC and its mobile version can make it happen. You can sync your images to your smartphone or tablet from your desktop, edit them on the go, and automatically have the edits applied to those shots on your computer. You can also sync images captured with your mobile device to your desktop

with only a couple of screen taps (see Quick Tip). Adobe uses Smart Previews—small versions of the original—when syncing images so they load quickly. Don't worry, though, the software manages this automatically and your original images remain full-size and intact at home. Lightroom Mobile is free for anyone with a Creative Cloud subscription and available for iOS and Android smartphones and tablets. We show you how to get started in the following steps.

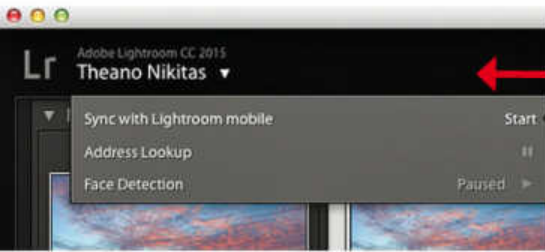
—Theano Nikitas

QUICK TIP: SEND SMARTPHONE PICS TO YOUR DESKTOP

Open Lightroom's mobile version. Create a new collection on your device by tapping the plus icon in the upper right. Tap Add from Camera Roll on the new collection icon. Tap on the images you want to add, then tap the check mark in the upper right. Open up Lightroom Desktop, and under Collections, look for "From Lr Mobile" to find the camera roll collection you made.

MOBILE IS EASY

If you have a Creative Cloud subscription, you have free access to Lightroom's mobile app, which lets you view and edit your images on mobile devices such as the iPad, above.

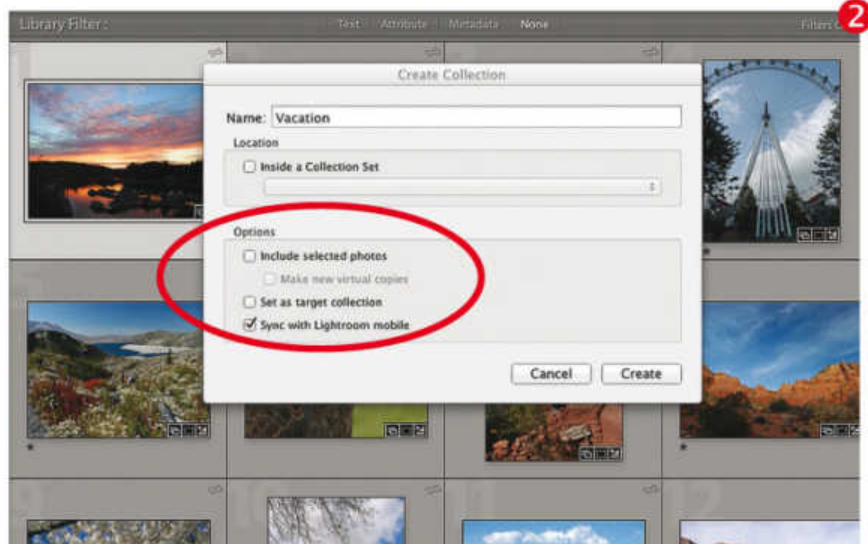


Step 1

Start by activating sync on your computer. Go to Help > Updates to ensure you have the latest version of Lightroom. Sign in with your Adobe ID in the upper left corner, if necessary. Then click the down arrow next to your name.

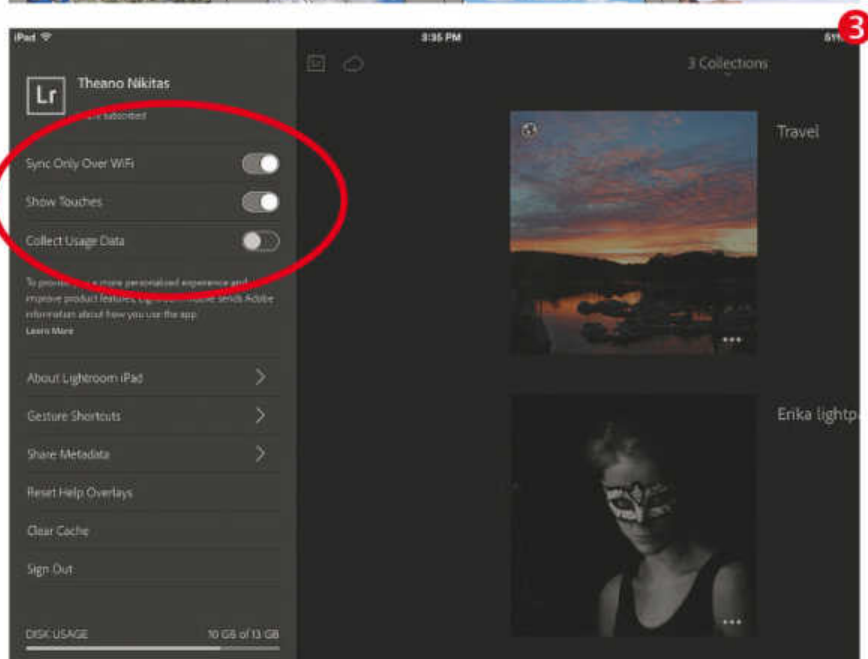
Go to Sync with Lightroom mobile and click Start to enable syncing.

Turn on Enable Address Lookup if you want LR to search GPS coordinates to provide geographical suggestions. Enable Face Detection if you plan to use the People View later on. This indexes the faces of people in all of your photos for faster loading if you use the People View in Lightroom. Go to Lightroom > Preferences > Lightroom mobile and ensure that "Prevent system sleep during sync" is checked.



Step 2

Lightroom can only sync images that are part of a collection, so make one if you don't already have a collection you want to sync. Most likely, you will want to pick and choose the images you want to sync rather than sending over large numbers of photos. **To create a collection, import the images you want to sync. Then click the plus sign next to Collections to open a dialogue box. Name the collection; make sure Sync with Lightroom mobile is checked.**

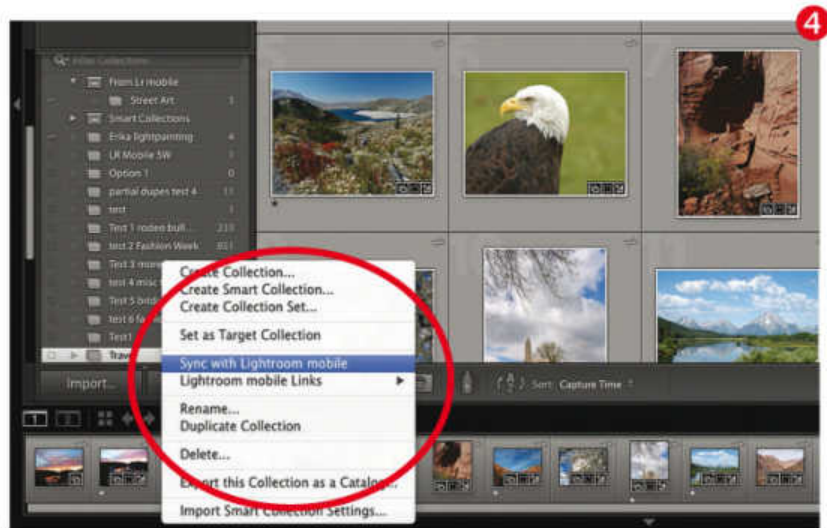


Step 3

Open Lightroom mobile on your mobile device and sign in using your Adobe ID and password. **Tap the LR icon to set preferences.** I chose to enable Sync Only Over WiFi and to Show Touches. The latter overlays a red circle where you tap the screen. You can also allow Adobe to anonymously collect usage data.

Step 4

Before you sync your images, decide whether you want to keep your image collection private (default) or share it publicly. To share with the world, click Make Public under the Map/Book module headings on your desktop. This will generate a URL allowing your images to be viewed online; you can share this URL with others, too. I chose to keep my images private. **To sync a collection to your mobile device, right click the name of the collection and choose Sync with Lightroom mobile.** Or click the small sync icon to the left of the collection name. Syncing progress is visible in the upper left above your name. To stop the process, click the sync icon or right click the collection name and again click Sync with Lightroom mobile. Then click Cancel or Stop Syncing in the warning dialogue.



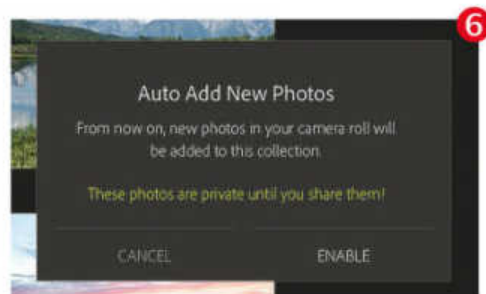
Step 5

Tap the three dots at the bottom of the collections cover photo on your mobile device to open the menu, which includes options to rename, delete, or present (which allows you to show all images on a single screen). **From the presentation view, tap an image and use the editing tools to crop, adjust, and apply presets.** I adjusted the contrast and shadows on an image. The edit was automatically synced to the Lightroom desktop.



Final Step

To auto sync all new photos from mobile to desktop, open mobile and tap the plus sign at the top right of the screen, then create a new collection or choose an existing collection. **Tap the three dots at bottom of the collection and tap "Enable Auto Add."** To share an image, tap a collection, tap a single image then tap the icon in the upper right corner. Tap Share and select your preferred sharing option.



EDITS IN TWO PLACES When you return to your desktop computer, you'll see that your mobile edits have made it onto your original files.



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MARKUS BERGER

LOOP LOOK

Use a visible light to add a dose of cool

CAN PORTRAIT lighting do more than simply illuminate a subject? That's the question Austrian photographer Markus Berger asked—and dramatically answered—when called upon to make portraits of athletes prior to the 2014 Sochi Olympics. Berger was inspired with the idea to incorporate circular light sources within the portraits to connote the iconic Olympic rings. The effect worked for him for multiple reasons. He also thought it threw attention on the athletes in a way that honored their effort and drive.

The bulb he used was a standard 12-inch circular fluorescent tube, the same type found on many kitchen ceilings. To adapt the tube for photographic use, Berger used wire cutters and electrical tape to attach a cord and standard household plug to the four electrical connections on the tube. He plugged the cord into a wall socket and was immediately ready to shoot.

Will your subject get uncomfortable holding the light? "Not really. The ring doesn't get that hot, though the ballast heats up. I tell my subjects that they can lay the ring down at any time, but no

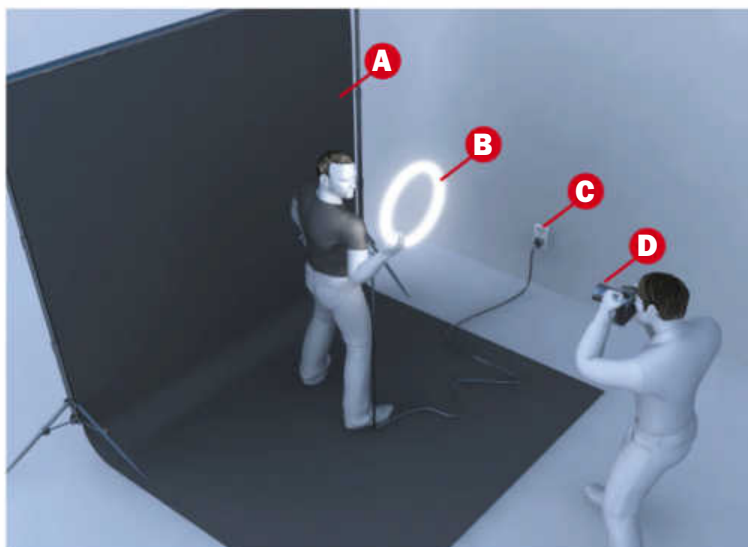
TRY IT, YOU'LL LIKE IT! "Fluorescent tube lighting is easy and beautiful," says Markus Berger. "I bring my ring light with me everywhere and use it, especially for subjects in a hurry."

TOOL TIPS

1 GE LIGHTING 33890 COOL 12-INCH DIAMETER CIRCLINE FLUORESCENT BULB

Adapting this fluorescent bulb for photographic use requires some knowledge of electricity. Have a friend help you, if necessary. (Bulb below shown with plastic cross bar used to attach it to a ceiling fixture.) **\$11, street**

2 SAVAGE SEAMLESS #20 SUPER BLACK BACKGROUND PAPER (107 inches by 12 yards) Even if your backdrop, like Berger's, is black, if you place your subject and tube light too close to the seamless, the paper's texture may show up. Keep your subject as far from the background as possible. **\$45, street**



KRIS HOLLAND/MAFIC STUDIOS

To light his portrait of Austrian Dominik Landertinger, a biathlete who would go on to win a silver medal at the 2014 Sochi Olympics, Markus Berger set up a black seamless background (A) and asked the subject to hold the modified tube light (B), which he plugged into a nearby wall outlet (C). Berger shot with a Leica S and Leica 70mm f/2.5 Summarit-S CS lens (D), exposing for 1/250 sec at f/4, ISO 640. In postproduction, he removed some flare around the tube light to give it a sharper edge. "To make sure I could pull this lighting off with the Olympics, I practiced on my family first. I was eventually able to place more than one head inside the light's circle. Once I had learned in detail how to use the tube light, I could start my project," Berger says.

one ever has," says Berger.

If you want to try tube lighting, he has the following suggestions.

• Use the right camera.

"Because a fluorescent tube isn't as powerful as a flash, you will need a camera that performs well at higher ISOs like 640 or 800," says Berger.

• Finesse the relative

distances. The closer the light is to your subject's face, the brighter the circular catchlights in the eyes will be. Your shutter speeds can be faster, too. (These are good things.) Moving the tube too close, however, can eliminate the catchlights entirely. It may also force you to frame the face too tightly and over-light the clothing so it competes with the face for interest. It's a game of tradeoffs.

• **Shoot a lot.** Household fluorescents are not photographic lighting tools. They flicker, which affects exposure, and their color

temperature changes constantly.

"You need to take plenty of shots to end up with a few that are well exposed with neutral white balances," warns Berger. "The color temperature issues can be hard to fix in post because each frame can display colors with slight but noticeable differences."

• Try differently shaped bulbs.

Berger used a circular StarLicht Rondine 40W (a German brand bought online), but he also found rectangular and square tubes, too. "You could cross-mount two rectangular tubes to end up with a star shape," says the photographer.

"I've done these tube-lit portraits of athletes on many different occasions now and the cool thing is that all you need is a dark room and about two minutes to get the shot. And the subjects usually love them."

—Peter Kolonia

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Grizzly Glory

A nature photographer's tips for capturing dramatic images of these majestic—and often misunderstood—creatures

Photos by Tom Mangelsen;
text by Jack Cramer

SCAVENGING

Here Mangelsen used a Nikon D2Xs and 18–200mm f/3.5–5.6G ED VR AF-S DX Nikkor lens. Exposure was 1/320 sec at f/10, ISO 200.

TOM MANGELSEN has photographed wildlife from hummingbirds to elephants, but he has a special soft spot for bears. And he's particularly fond of the grizzlies that roam Grand Teton National Park near his home in Jackson Hole, Wyoming. "The more I see bears, the more I feel for them, and their plight in a

BLONDIE BEAR
Mangelsen photographed a young grizzly with a Nikon D3S, 600mm f/4G ED VR AF-S Nikkor lens, and TC 14 EII teleconverter (1.4X); 1/640 sec at f/10, ISO 3200.

terribly crowded world," Mangelsen says. "These bears in the parks are enjoyed by so many people—and the awareness the people come away with because they've seen these grand animals, it's the highlight of their vacation most times."

Mangelsen has produced or contributed to more than a dozen books on various wildlife species around

the world. But in his forthcoming volume *Grizzly: The Bears of Greater Yellowstone* (Rizzoli, \$60), he focuses on a single family of bears, all born and raised by a matriarch known only as 399. "She was the 399th bear that was tagged in the Greater Yellowstone ecosys-



tem,” Mangelsen explains. “She’s as good a mom as you get. She’s raised several sets of cubs to adulthood—which is about two and a half years, when they go off on their own.”

In the Tetons, the 20-year-old 399 and her cubs are so accustomed to human tourists that they often scavenge for food near the park’s paved roads. “She has learned to negotiate between the human world and the bear world,” Mangelsen observes. “She knows it’s probably safer to be around humans and their vehicles than in the deep forest where big boars or male grizzlies may harm her cubs.”

As a result, 399 is something of a celebrity, perhaps the most famous bear in the Greater Yellowstone area. Mangelsen has studied and photographed her and her offspring for more than a decade, relying on key tools as an image-maker: discretion, patience, reflexes, and artistic opportunism.

Keeping a Distance

The notion that grizzly bears are reckless killers is “a misconception,” Mangelsen says. “In the last dozen years or so there have been just ten fatal attacks by grizzlies in the U.S. But they can be dangerous, with the swipe of a paw or a bite that could kill an elk or a human.”

Bears are emotional, with varied personalities and tolerance levels around their cubs and prey. “Give them space,” Mangelsen advises. “The parks department has a 100-yard rule—about a football field of space. It’s almost unenforceable, but it’s a good idea.” (For more safety tips, see the sidebar at right.)

With safety in mind, Mangelsen relies on telephoto lenses, typically capturing grizzlies with a 600mm f/4G AF-S Nikkor ED VR mounted on his Nikon D4 (as in the portrait of 399 and cubs opposite). “I add extenders,” he notes, including 1.4X, 1.7X, and 2X AF-S teleconverters. He often photographs from the

WANDERERS

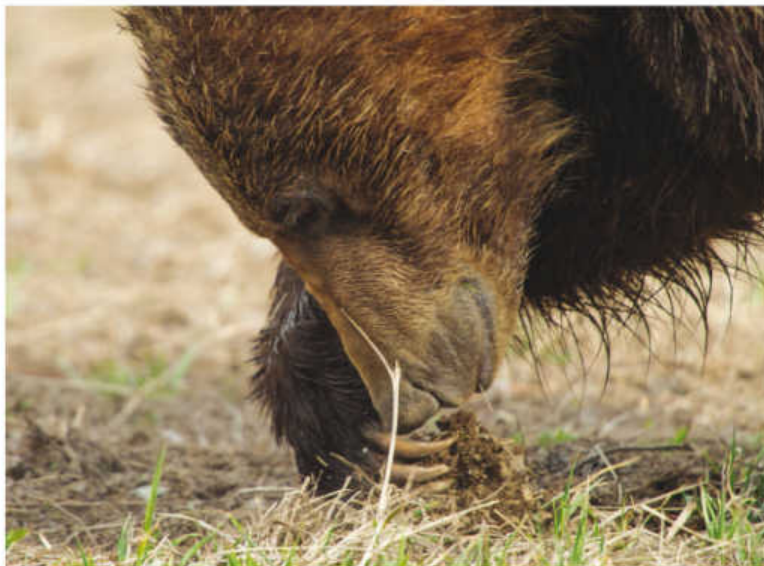
The shot at top left was made with a Nikon D4 and 80–400mm f/4.5–5.6G ED VR AF-S Nikkor lens; 1/320 sec at f/5.6, ISO 800.

FOOD FIGHT

Mangelsen shot 399 and her two cubs with a Nikon D2Xs, 600mm f/4G ED VR AF-S Nikkor lens, and TC-17EII AF-S teleconverter (1.7X); 1/400 sec at f/16, ISO 250.

DIGGING ROOTS

This close-up was shot with a Nikon D4, 600mm f/4G ED VR AF-S Nikkor lens, and TC-20EII AF-S teleconverter (2X); 1/500 sec at f/8, ISO 1600.



open window of his vehicle. “For support, you can use a beanbag in the car,” he says. “Outside, I use a tripod at least 90 percent of the time.”

But you want variety, so don’t always zoom in. To frame wildlife in atmospheric landscapes, Mangelsen carries shorter Nikkor lenses including the 70–200mm f/2.8G ED VR II, 200–400mm f/4G ED VR II, and 28–300mm f/3.5–5.6G ED VR.

Anticipation

Lucky shots result when—as the saying goes—preparation meets opportunity. “The secret of photography is trying to put yourself in a position for serendipity to happen,” Mangelsen says. “You have to constantly think about where to position yourself and how to maximize the background and light.”

A case in point: the shot on page 49 of 399 and her two cubs

Don’t Get Mauled!

The typical diet of grizzly bears includes many things—from ants to elk, plants to salmon—but not people. Bears are usually apathetic toward humans. But two things can set them off: the search for food and the protection of their young. Here’s how to avoid being one of the unlucky few.

- 1 DON’T TEMPT WITH FOOD** “Keep a clean campsite,” Tom Mangelsen advises. “Don’t leave food around; hang it in a tree away from camp. Keep garbage in a tight container. If you’re cooking bacon or pork chops and you get grease on your clothes, don’t sleep in those clothes—put them in a bag and hang them too. Don’t feed bears, and don’t fight over prey if you’re a hunter.”
- 2 LEAVE THE CUBS ALONE** “Female bears are very protective of cubs,” Mangelsen says. Even the docile 399 once lashed out at a local jogger who alarmed her and her cubs on a trail at sunrise. “She bit him in the butt,” Mangelsen says. “He got too close to the cubs, and he knew he was in the wrong.”
- 3 WALK, DON’T RUN** “If you’re face to face, don’t run from a bear, because that triggers a chase response,” Mangelsen says. “Walk away slowly. Just leave, maybe talk gently, and show the bear that you’re not a threat.”
- 4 DON’T BE A HERO** The protagonist of the Werner Herzog film *Grizzly Man*, Timothy Treadwell, was killed by a grizzly in 2003 while filming a documentary in Alaska. “I knew him,” Mangelsen recalls. “He was camping in the thick of it in the population of grizzlies, late in the season when there weren’t many salmon, and he had an encounter with a rogue bear. Tim was sort of an odd guy. He thought he was one with the bears. And he got a bit too familiar, let’s say.”



The fishing hole also attracted other prey for the bears, such as otters and muskrats. Mangelsen sat back and waited, with an 18–200mm lens on his Nikon D2Xs to capture the landscape, including Mount Moran on the right and Oxbow Bend in the foreground.

It takes patience and persistence to match the light and the scene. “I select the place that corresponds with the mountain and the cloud cover, and just wait,” he says. “Or I’ll return day after day in that great morning and evening light. Some days I don’t see anything, or I’m in the wrong place, or beautiful clouds roll in but nothing happens. But if it does, you’re there.”

Fast Reactions

Some shots, on the other hand, require quick reflexes. At the same fishing hole, Mangelsen homed in on the bears (page 50). “I don’t try to depend on a decisive moment in a situation like this, because there’s too much action,” he recalls. “They’re clawing at the ice and dipping their heads in the water and pushing and shoving each other to get the fish.”

Such a scene calls for multiple frames at fast shutter speeds (1/400 sec here). “With my Nikon D4S, you can shoot 98 frames before the buffer fills up,” Mangelsen notes. “I try not to let the buffer fill up regardless of what camera I’m using. So I shoot 10 frames, wait a few seconds, shoot 10 frames and wait again. Or if something is really happening, I know I have 98 frames and I’ll quickly shoot all 98—then you have to let the buffer clear out. But with digital, you can snap away. There’s plenty of time to pick that one frame later.”

The key is getting out where the wild things are. “You’re not going to get anything sleeping in, or sitting at home or in the bar—or at the office for that matter,” Mangelsen says. “None of us own these animals, but we have a right to experience them in our national parks.”



POLE DANCE
Mangelsen captured triplets on a utility pole using a Nikon D4, 600mm f/4G ED VR AF-S Nikkor lens, and TC-20E II AF-S teleconverter (2.0X). Exposure was 1/640 sec at f/16, ISO 6400.

WILLOW FLATS
A bear known as 610 (left) was captured with a Nikon D3X and 70–300mm f/4.5–5.6G IF-ED AF-S VR Zoom-Nikkor lens; 1/800 sec at f/16, ISO 640.

on a fishing expedition, framed by the Grand Tetons and rolling clouds at sunrise. “I saw some coyotes who found a fishing hole,” Mangelsen recalls. “There was a mass die-off of suckers

and trout, because the nearby dam water fell and they were trapped under ice. So I thought: If 399 finds these, she and her cubs are going to have a bonanza! And they did.”



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STAR VALUES

When it comes to getting a good price on new gear, September is a great time to shop. We found deals for shooting sports and wildlife, landscapes, and portraits, plus eleven bargains that suit any genre. Get ready to fill out your kit!

Text by
Debbie
Grossman;
display
photos by
Brian Klutch



SEEKING SPEED

Sports and wildlife require gear that can keep up. That doesn't usually come cheap, but we found a handful of ways to capture the action more affordably.

① Samsung NX1

\$1,500, street, body only;
Samsung 50–150mm f/2.8 S ED OIS
lens, \$1,600, street

Samsung for sports and wildlife? Seriously. This camera/lens pair may ring up to about \$3,100, but when you consider the specs, you've got real value. Housing the world's first BSI APS-C sensor, at 28.2MP, the NX1 rated Excellent in image quality in our lab tests at ISO 100–3200. Most importantly, its top shutter speed of 1/8000 sec is ideal for action-packed moments. Bursts top out at 15 fps with autoexposure and full tracking autofocus between shots, and it captures up to 70 JPEGs or 25 RAW (14-bit) frames before the buffer fills.

② Sigma 150–600mm

F/5–6.3 DG OS HSM CONTEMPORARY

\$1,089, street If you can't get close to the athletes, or you don't want to get close to a bear (see page 48), you'll need a long telephoto zoom. And if an arsenal of prime lenses isn't in the cards, consider a versatile, sharp, and multi-featured model such as this Sigma. It's much less expensive than the tele primes with constant apertures like f/2.8 and f/4, but it will still get you near enough to capture the action.

③ Induro Gimbal GHBA

\$175, street Any wildlife shooter will tell you a gimbal is essential for continual tracking of moving subjects with heavy tele lenses. But they can be pricey. Enter Induro's solution, an inexpensive accessory that converts Arca-Swiss-type ballheads to gimbal heads. (This one is shown on the Induro BHM2S ballhead; \$200, street.) The GHBA's oversized locking knob allows for solid attachment between camera and gimbal arm, and it weighs only 1.1 pounds. Already own a ballhead with an Arca-Swiss quick-release plate? Get the gimbal attachment sans plate for \$140, street.

④ Lowepro Flipside

300 BACKPACK \$74, street If you have a long lens, you'll need a long bag. Lowepro's Flipside 300 is an affordable option, with an interior length of 15.9 inches and room on the sides for two shorter lenses and a few accessories, which can be stored in the included pouch. A tripod/monopod holder hides away until you need it.

MANFROTTO XPRO GEARED 3-WAY PAN/TILT TRIPOD HEAD

\$200, street

Who it's for: Macro and astro shooters **Why it's a deal:** This well-built instrument allows micro adjustments to orientation, and its cleverly designed handles switch quickly between fine and coarse adjustments. It may be the industry's least-expensive geared tripod head. A comparable Linhof, for example, runs you \$6,240.



TAMRON 15–30MM F/2.8 DI VC USD

\$1,199, street

Who it's for: Wide-angle lovers on a budget

Why it's a deal: This fast and sharp glass has great stabilization for a wide-angle zoom, and it's priced at almost half of what Sony's Zeiss-badged 16–35mm f/2.8 costs. Compared to the Canon 16–35mm f/2.8 and the Nikon 14–24mm f/2.8G? It's priced about \$500 less.



EPSON V600 SCANNER

\$209, street

Who it's for: Current (and former) film devotees

Why it's a deal: High-quality, affordable film scanners have gone the way of the dodo. That makes a film-capable flatbed so valuable. With included holders, you'll be able to scan 35mm and medium format film, plus slides. When first introduced in 2009, this model went for \$250. Look for rebates before you buy!





**FLASHPOINT
CL-300
ON-CAMERA
LED LIGHT**

**\$100, direct
from Adorama**

Who it's for: Videographers on the go

Why it's a deal: With 300 daylight-balanced LEDs, this hotshoe-mounted light has on-board stereo mics that connect to the camera for audio recording. You can opt for auto light leveling, and it includes diffusion and tungsten balancing filters.



**SANDISK 64GB EXTREME
PRO SDXC UHS-II**

\$130, street

Who it's for: 4K video shooters

Why it's a deal: With write speeds up to 250MB/second and read speeds up to 280MB/second, a card like this is crucial for 4K shooters and makes data transfer faster for all. When we gave it a POP Award back in December, it cost \$225. How quickly storage prices fall!

**EPSON VELVET FINE
ART RAG PAPER**

**Starting at \$23, street,
for 20 letter-sized sheets**

Who it's for: Rag lovers

Why it's a deal: This archival paper used to be pricier, but competition has brought prices down. Now the 100-percent cotton, 260 gsm matte surface is one of the least expensive rag papers. Comes in sizes up to 17x22 inches.



**CASE LOGIC REFLEXION DSLR
+ IPAD CROSS-BODY BAG**

\$43, street

Who it's for: Stylish, small-kit shooters

Why it's a deal: Fashion ain't cheap, and most well-designed camera bags have a price to match their looks. But this bag—shown in morel but available in two other shades—carries a DSLR, lens, and flash in a padded compartment. There's an iPad slot, too.



LOOKING FOR ADVENTURE

Whether you're hiking, climbing, or trekking, this stuff will have you ready for the great outdoors without breaking the bank.

① Pentax K-S2

\$628, street, body only; Pentax 18-135mm f/3.5-5.6 DC WR lens, \$399, street

Adventurers can't go wrong with the weather-sealed K-S2 DSLR. It's got a 100-percent accurate pentaprism viewfinder and it scored Excellent for image quality in our tests at ISO 100-400. Its AF is speedy in mid-to-bright light, and the 5.5-fps burst speed is very good for this price range. Add the water resistant 18-135mm lens (which was \$500 when first released) and you'll be ready for anything.

② Tokina

AT-X 11-20MM F/2.8 PRO DX

\$599, street This versatile wide-angle lens (tested on page 80) is equivalent to about 16-30mm in full-frame format and is able to take in every bit of that gorgeous vista. Available in mounts for Canon and Nikon, it's got a fast and constant f/2.8 maximum aperture and a one-touch focusing clutch for easy switching between AF and manual focus. The cost? About \$200 less than some comparable lenses.

③ Vanguard Alta Pro

**284 CT CARBON FIBER TRIPOD
WITH SBH-100 BALL HEAD**

\$330, street, for the kit Because of their light weight, carbon fiber 'pods are ideal for hiking, but they are usually very pricey. This one, which we've seen as low as \$260 after rebates with this ballhead (do a web search for deals before you buy!), has a great weight-to-load ratio and four leg sections that are compact when folded (21.1 in.) but extend out to 63 inches. The head includes two quick-release plates, and the legs come with a bag, too.

④ Tiffen

**62MM DIGITAL HT NEUTRAL
DENSITY FILTER KIT \$65, street**

If you read *Pop Photo* regularly, you'll know how valuable ND filters are for landscape shooting, particularly when it comes to capturing moving water or allowing wider apertures in bright situations. Price will vary by filter size, but this kit is comparatively inexpensive for high-quality filters and includes 0.6 (2-stop); 0.9 (3-stop), and 1.2 (4-stop). Comes with filter case.

⑤ Manfrotto

OFF ROAD HIKER 30L BACKPACK

\$200, street This go-anywhere pack holds a DSLR, a 70–200mm lens, plus another lens, and leaves room for non-camera gear in the top compartment. A mesh back keeps the bag from getting you sweaty, and there's a chest strap to secure the camera when you're wearing it around your neck. A rain cover is included, and it's half the price of adventure bags with similar specs. Look for a kit deal that includes either a pair of Manfrotto walking sticks or a light tripod (usually \$100) for free.



① Oben

AC-1361 3-SECTION ALUMINUM TRIPOD WITH BA-117 BALL HEAD

**\$170, direct
from B&H**

A tripod for portraits need not be light, but it must be stable. This one is solidly built but so inexpensive that the included ball head is practically a freebee. It's got independently adjustable leg angles, a hooked center column to accept ballast bags, rubber-tipped feet for no-scratch, no-slip shooting on finished floors, and a reversible center column for shooting straight down.



CAPTURING THE HUMAN ELEMENT

Planning portraits? Here's some accessibly-priced gear to make pictures that flatter.

② Olympus Pen E-PL7

\$399, street, body only; Olympus 45mm f/1.8 ED lens, \$299, street

Opting for a camera that came out last year can save you some big bucks; this one was listed at \$600 when it was released, and it hasn't lost its appeal. With the same 16.05MP LiveMOS Four Thirds sensor and three-axis sensor-shift stabilization as the OM-D E-M10 but inside a smaller camera body, it travels anywhere there are people to capture. And its LCD touchscreen flips 180 degrees down for selfies or sneaky shooting. Add the 45mm lens (a 90mm equivalent) for lovely portraits with defocused backgrounds.

③ Canon

EF 50MM F/1.8 STM \$125, street

Every portrait shooter needs a 50mm lens, and this full-framer for Canon is particularly affordable. The f/1.8 aperture is plenty wide for blurring backgrounds, and if you're shooting video the stepping motor will aid you while you focus. It has the best subject magnification of comparable 50s and costs about \$50 less than Nikon's 50mm f/1.8G.

④ Ledgo

VALUE SERIES DAYLIGHT LED PANEL 900

\$470, street If you're new to studio lights, LEDs are a great place to start. Their constant output makes experimenting with setups easy and is perfect for video. This panel promises consistent color with minimal magenta or green spiking (a stand-out at this price) and accepts standard 1x1-foot third-party light modifiers. Plus it comes with barndoors, carrying case, and three-filter kit for soft, extra soft, and tungsten-balanced output.

⑤ Ape Case

ACPRO4000 DIGITAL SLR AND LAPTOP ROLLER BACKPACK

\$176, street Whether you're shooting a wedding or portraits on location, a roller bag is essential to tow heavy gear. These things are usually pricey, but Ape Case's ACPRO4000 is surprisingly affordable and even has retractable and detachable wheels. It totes a lot, too, carrying a DSLR and up to six extra lenses, plus a 16-inch laptop.



CANON PIXMA PRO-100 WIRELESS

\$359, street; as low as \$250 with rebates

Who it's for: Prolific printers

Why it's a deal: Archival isn't everything—sometimes you want big, beautiful images to hang on your walls and hand out to friends, and you don't need them to last 100 years. This printer's eight dye-based inks (three are monochrome) are less pricey than pigment ones, and the printer's a deal too.



CANSON INFINITY 2271 BARYTA PHOTOGRAPHIQUE INKJET PAPER

\$29, street, for 25 letter-sized sheets

Who it's for: Darkroom nostalgists

Why it's a deal: One of the most popular baryta papers, Canson's Infinity uses the same barium sulphate coating as in silver-halide printing. It's also one of the few barytas for less than \$30 a box.

ROKINON 8MM F/3.5 UMC FISH-EYE CS II LENS \$229, street

Who it's for: Distortion aficionados

Why it's a deal: Want to try a fisheye? This MF-only lens is accessible. Not only does it come in seven mounts, but it also costs more than \$600 less than its nearest competitor, the \$899 Sigma 8mm f/3.5. Oh, and it comes with a removable petal-shaped lens hood.



EIZO COLOREDGE CX271 27-INCH MONITOR \$1,372, street

Who it's for: The color-obsessed

Why it's a deal: Time was, only pros could shell out for a high-end Eizo. But competition brought the price down. With a built-in calibration sensor, you'll never need an external device to ensure accurate color.



Better Everyday

Want to capture your life more beautifully? We gathered tips from three avid snapshotters—who are also pros—to help you get casual shots right. *By Peter Kolonia*



"MORE SNAPSHOTS are being made every day than ever before," says Preston Utley, a Denver-based wedding photographer who also produces The Snapshot Diaries, a website dedicated to his everyday pics. "Photography has become the universal language, and photo sharing sites like Snapchat, Instagram, and Facebook have made snapshots the most popular way to share experiences."

The better these everyday photos, the better we can share the passions, emotions, and simple details of our lives. And the pros we interviewed all agree that taking more engaging day-to-day

snapshots improves their professional images, too.

For many of us, our best snapshots can feel like photographic gifts of fate. But not for these pros. More often than not, they bring the same focus and planning to snapshotting that they bring to their day jobs.

"Snapshots aren't necessarily reality," says Lucy Schaeffer, a food and lifestyle specialist based in Brooklyn, "but instead they are what a photographer chooses to present as reality." Her best are often constructed but appear "spontaneous, real, untidy, emotional, surprising, and compelling," she says.

ROCK CLIMBERS

"Don't be afraid to direct your friends," says Pascal Shirley. Here he positioned his pals to underscore the boulder's triangular shape.

GROUP HUG

"If I miss a magical moment, I try to recreate it," says Shirley. And when this one was over, he asked for a redo.

QUEEN FOR A DAY

For Lucy Schaeffer, often her best kid snaps happen when she shoots straight down on the smiles.

OUTDOOR CATTLE

For Denver's annual steer parade, Preston Utley added the unexpected by cropping for the downtown buildings, not the bulls.

BLUSTERY DAY

Utley likes wide-angle lenses for snapshots...but not too wide. A 35mm, like the one used here, will include most of a scene without introducing distortion.

"I will often ask my kids to do something again if I missed it the first time, or ask them to do something again, 'but bigger,'" says Schaeffer. Often, in the middle of a family activity, if she thinks the scene is too somber, she will let loose with a joke. "That way I get the action I want, but with real smiles. I don't hesitate to move people closer to a better background or to the other side of the room for better light or camera angle."

Based in Venice Beach, California, lifestyle pro Pascal Shirley does the same. "Most of my pictures are orchestrated snapshots," he says. "First I decide on the location and the lighting. Then I might move some things around or take away elements that I don't like. I don't get caught up shooting in one location; I keep moving around for different backgrounds."

Direct your subjects, but don't force anything, advises Shirley. You have to pick up on emotions as they happen, but if your subjects start to zone out, it's time to move on. "Over-directing is a classic mistake. Having a tolerance for uncertainty will lead to better snapshots. These moments are sometimes not staged but are what I call 'in between' moments. Stay fluid, listen to your subjects, and look for these moments."

Utley agrees that consistently good snapshots don't come about by luck. "Road trips, family gatherings, walking the dog, or moments around the house when the lighting is nice" are times when great snapshots happen, he says. Plan such moments in advance and have plenty of memory cards and charged batteries on hand.

For Schaeffer, great snapshots often come as the result of creative camera angles. "I rarely shoot snapshots of kids from

[my] eye-level. Getting [the camera] really low adds drama and brings you into the kids' world. Standing above and shooting straight down is also fun and graphic," she says.

Capturing kids and adults while they are interacting with the people they love is almost always rewarding, says Schaeffer. "Sometimes I just stand back and let it happen, while other times I'll nudge the moment along."

Her main goal? To tell a story. "I shoot pulled back, then zoom in to middle distances, and finally zoom in even closer for more detail. Together, the whole package should have a nice flow," she says.

Whatever you do, keep firing. "If you shoot for a while, your subjects forget that you're there and they forget to be self-conscious," says Schaeffer. Another reason? Shoot a lot and you will have far more pictures to work with later. And editing, she says, is the secret; "Half of great photography is great editing."

Utley recommends that if you're working with a phone or camera with a slow lens you probably won't be able to isolate a subject by defocusing the background. If everything will be sharp, work with that. "Create layers within your compositions, where near-, middle-distance, and background subjects form some kind of relationship, interest, design, or balance."

And watch out for group shots with everyone looking at you. For Shirley, a good posing technique is waiting for your subjects to look in different directions. "If you find people all staring at your camera or at one particular object in a scene, it can look fake. Humans are not statues, so get them to move and look around. Movement adds energy and makes for stronger images. Going for walks always leads to great snapshots," he says.



SPIDEY AND MOM

Shirley tries to capture what he calls "in-between" moments, when he catches people unaware and natural—as he did here.

With kids, get ridiculous, adds Schaeffer. If you want little kids looking at you and laughing, she says, "tell them things that are just plain wrong, preferably disgusting. 'I heard your favorite food is smelly socks' usually gets a smile or laugh," she says. "And then take it to the next level: 'What do you like to drink with your socks? Coffee?'"

Watch your framing and be familiar with your camera controls. "When snapshots fail, it's most often due to composition and lighting errors," says Shirley. "Cluttered backgrounds, camera shake, and exposure errors—either too dark or too light—are the most common problems," he says. Master those camera controls.

How should you set exposures? For spontaneous kid shots Schaeffer almost always shoots in aperture-priority mode. "That way I can control depth of field, which is the thing I care most about. I keep an eye on shutter speed, trying to keep it to at least 1/60 sec or, ideally, 1/125 sec. If it drops below that, I bump up the ISO. I shoot wide open in low light and constantly adjust the autofocus points as I shoot, because I don't always trust my eyes to confirm focus as quickly and accurately as my camera's AF system can."

But you don't need a fancy camera. "Almost any that you actually take with you will have the potential of capturing great

FEEDING TIME

Utley captured these Denver Zoo giraffes with his favorite rig for snapshots: Canon's EOS 5D Mark II and Canon 28mm f/1.8. "It's compact and unintimidating," he says.

DECORATING

Again, Schaeffer shot directly down on her young subjects, but focused this time on the activity (making gingerbread houses), not the faces.

GOOFY CUP

To ensure upbeat party snapshots, Schaeffer propped a birthday celebration with gag drinking cups. It worked!

AUTUMNAL PAIR

Even though this couple wasn't romantically involved, Shirley directed them to hug for a better snap. Don't hesitate to orchestrate even casual moments.

snapshots," says Schaeffer. But a camera that's too cumbersome or unresponsive is not the right tool for snapshots. "My iPhone is always in my pocket, and I shoot snapshots with it daily," she says.

Shirley thinks that zoom lenses are crucial for taking better snapshots, because you can compose more quickly and by zooming out for the bigger picture, you create more options for editing and cropping later. "I would stay away from slow cameras with frame rates lower than, say, 5 frames per second and/or quickly filled burst buffers," he says.

Larger cameras, lenses, and lighting setups don't work for snapshotting for the obvious reasons. Besides, says Shirley, smaller cameras are less threatening. "I like the Fujifilm X 100-series cameras, the Ricoh GR, and the Sony point-and-shoots."

Keep to natural, ambient light, he adds. "You really don't need artificial lighting these days; digital sensors are so good in low light now. Don't be afraid to push the ISO. I've printed great snapshots with ISOs as high as 3200."

Schaeffer likes available light in all its forms. "Windows, iPad screens, the end of tunnels, anything, really. I often turn off artificial lights in order to use nice window light," she says. "Food looks best in daylight, and kids do too. I bump up the ISO and/or shoot wide open to milk any available light that I can find."



Utley agrees. “Natural window light and whenever the sun is low in the sky make for better snapshots. If you’re forced to shoot during harsh midday light, try to move your subjects to wherever there’s shade,” he recommends.

As for backgrounds, simple is better than cluttered. “If something in the scene isn’t contributing to your picture, remove it,” says Shirley. “Remember, everything in a picture can be considered a prop and, as the photographer, you decide what stays and what goes. Usually, you can’t go wrong with natural backgrounds.” Bring your snapshot sessions outdoors whenever possible.

All three of our photographers agreed that great snapshots come their way because they always have a camera on hand. “The more often you carry your camera and use it, the more pictures you will take, and the better photographer you will become,” says Pascal Shirley. And not just when you’re taking snapshots.





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AUTHORITATIVE TESTS, REVIEWS, & BUYING



ILC TEST

HOT SHOT

Fujifilm's second
X-T-series camera is tops

IF YOU HAVEN'T watched the behind-the-scenes look at the manufacturing process of the Fujifilm X-T10, you should go to PopPhoto.com right now and do so. The amount of intricate handiwork and attention to detail, while not necessarily unique to Fujifilm,

definitively shows how much hard work goes into making a camera.

And what a camera! This interchangeable-lens compact, which sits just below the flagship X-T1 in Fujifilm's lineup, is a complicated machine with a tough (but not weather-sealed)

magnesium-alloy body. It uses the same 16.3MP APS-C-sized X-Trans CMOS II sensor that's in the X-T1 and matches that camera's button layout, so pro shooters can use the X-T10 as a second body. The 2.36-million-dot OLED electronic viewfinder provides a great

**FUJIFILM
X-T10**

KEY SPECS

SENSOR:
16.3MP X-Trans
CMOS II (APS-C size)

SENSITIVITY:
ISO 100–51,200

BURST RATE: 8 fps

AUTOFOCUS:
49 selectable areas

PRICE: \$800, street,
body only

INFO: fujifilmusa.com



SHOWN WITHOUT A LENS

preview and has a mode to mimic an optical finder by not showing changes to exposure. In its most appealing kit, it streets for \$1,099 (with 18–55mm f/2.8–4 Fujinon R LM OIS lens), \$600 less than the X-T1 with the same lens.

With all their similarities, including the autofocus improvements the X-T1 got with its recent firmware upgrade, we couldn't wait to see how the X-T10 measures up to its pricier cousin.

In Our Test Lab

It may be due to minor differences in their RAW processing software, but the X-T10 eked out a bit more resolution than the X-T1 in the Popular Photography Test Lab. This was enough to give it an Excellent rating in overall image quality at ISO 100 and ISO 200.

By the way, as with all X-series cameras, ISO 100 and the three uppermost sensitivity settings (ISO 12,800–51,200 for the X-T10) are available only for JPEGs. We surmise Fujifilm does this to gain more control over the output, but we'd rather it opened up RAW capture for those of us who want more bit depth. As a result, we performed our lab tests at the extremes of the ISO range on JPEGs instead of our usual RAW files converted to TIFFs in the software that ships with the camera.

Turning in an average Delta E of 7.5, the X-T10 earned an Excellent rating in our color accuracy test. That's pretty common these days, but still is worthy of note.

If there's one place the X-T10 lands behind most of the similarly priced cameras on the market

it's in resolution. With so many entry- and mid-level cameras now sporting 24MP sensors, it's hard for a 16.3MP chip to keep up. At both ISO 100 and 200, the X-T10 captured 2500 lines, our cutoff for an Excellent rating, so it nabbed top honors in this test just by a hair. The X-T10 holds its resolving power well, serving up 2425 lines at ISO 1600 and 2225 lines at ISO 6400, after which RAW is no longer an option. At ISO 12,800 resolution dropped to 2190 lines and at the camera's top sensitivity of ISO 51,200 it captured 1975 lines.

How does this compare with other APS-C-sensor cameras in its price range? Nikon's D5500 delivered 2760 lines at ISO 100, while Canon's EOS Rebel T6s captured 2729 lines and Sony's Alpha 6000 2640 lines at the same ISO. While the Fujifilm can't quite net the same level of detail as these others, it will likely matter less if you're not printing at very large sizes—all of these models resolve more than enough detail for great looking prints on 13x19-inch paper. If you're primarily sharing on social media or looking at images on a video screen, you'll have no problems with any of them.

Noise was fairly well controlled and we're glad Fujifilm tailored the default noise-reduction settings for each ISO in the modified version of the Silkipix RAW conversion software that ships with the X-T10. (That was not the case when we tested the X-T1, so its noise numbers will look a bit worse except when based on JPEGs.) The new camera kept noise to a Low or better rating from ISO 100 through ISO 1600 and didn't reach an Unacceptable rating until ISO 12,800. That's pretty impressive and should give street and portrait shooters plenty of sensitivity options that won't prove too noisy.

Again, Nikon's D5500 beats it by maintaining a Low or better rating

What's Hot

Versatile control system; great OLED electronic finder

What's Not

Pixel count lags the competition; comparatively pricey

Who It's For

Shooters looking for a less expensive alternative to the Fujifilm X-T1

up to ISO 6400, but Canon's T6s comes in just behind the Fujifilm with Low or better to ISO 800, and the a6000 does so up to ISO 400, matching the result we saw with the X-T1 and the older RAW software.

In the Field

The X-T10 takes its design from the X-T1, though it's slightly smaller and 2 ounces (13%) lighter. Forgoing a reflex mirror, of course, makes it noticeably more compact and lighter than competing DSLRs; the prominent EVF, though, gives it a bulkier feel than small rangefinder-style ILCs like the Sony a6000.

That the button layout nearly mirrors that of the X-T1 is a good thing. The buttons are well placed and are complimented by a quick menu to let you change settings quickly while shooting. You can customize many of the buttons and even push in the command dial to make it act as another customizable control. So while the X-T10 omits the X-T1's focus assist button, you can choose another to convert to activate this function: With focus peaking turned on, we could achieve roughly proper focus before zooming in with focus assist and fine-tuning to our preference rather quickly after just a little practice.

Atop the X-T10 you'll find something new: the Auto Mode Switch lever. Flip this and the camera enters Fujifilm's advanced SR Auto mode, which selects the proper scene and AF modes for your subject. Sure, you might scoff at the idea of auto mode. But every now and then, we hand our camera to someone else to point and shoot at the spur of the moment, and this switch provides a really easy way to do this and then set the camera back to your liking fast.

The AF system provides single, zone, and wide/tracking options. (The latter two are new and have also been added to the X-T1 through a recent firmware update.) The zone

option essentially groups AF zones into 3x3, 5x3, or 5x5 zone areas. This helps maintain focus on subjects moving within a part of the frame. Wide/tracking will track a subject as it moves within the larger frame. In our field tests, the X-T10 did well at tracking for this price range. Plus, autofocus proved pleasingly fast outside of continuous AF mode.

Video showed more artifacts than we generally see in other cameras, and we got a pronounced jello effect in objects moving quickly through the frame. For casual clips, it should be fine, but the X-T10 shines more as a still camera than a video tool.

Burst shooters should like the top speed of 8 frames per second, though you'll have to dial it down to 3 fps to get autoexposure and autofocus between each shot. This means that the X-T10 ends up being slower than the Nikon D5500 and Canon T6s's 5 fps and the Sony a6000's 6 fps for full performance. The X-T10's buffer fills after 8 shots when shooting RAW or until your memory card runs out of room.

The OLED EVF has a really fast refresh rate and was very pleasing to use. If you prefer the style of view provided by an optical finder, you can set it to not show changes to exposure settings—this still won't give you the same feel as an optical finder, but you'll avoid some distractions. We enjoyed the WYSIWYG nature of EVF shooting with the X-T10 and very much appreciate being able to navigate menus without moving the camera away from our eye. Similarly, the tilting LCD lets you compose at angles or in situations where you otherwise might not be able to frame the shot you want.

The built-in Wi-Fi was as easy to set up as it is with most other cameras, and we used it with a Samsung Galaxy S3 without a major hitch. Fujifilm's Camera Remote app provides a lot of control over the camera settings. Of course, Wi-Fi

COMPETITIVE SET

CANON EOS REBEL T6s APS-C

\$1,199, street, with 18-135mm f/3.5-5.6 EF-S IS STM lens The first Rebel to have a status LCD on top of the camera, the T6s also steps above 24MP and has a rear command wheel that can control exposure compensation just like the big rear wheels on pricier Canons. **STANDOUT SPEC** Built-in Wi-Fi lets you transfer images to your phone or control the



camera remotely
SENSOR 24.2MP CMOS, 14-bit RAW capture
IMAGE STABILIZATION Lens-based
VIDEO TOP RES/FRAME RATE 1080p/60fps
LCD 3-in., 1,040,000-dot

NIKON D5500

\$1,397, street, with 18-140mm f/3.5-5.6G ED VR lens The articulating LCD screen and built-in Wi-Fi, coupled with its image quality in both stills and video makes this Nikon one of the best bodies for shooters looking for their first interchangeable lens camera or anyone stepping up from a lesser body. **STANDOUT SPEC** Excellent image quality all the way up



to ISO 6400
SENSOR 24.2MP CMOS, 12- or 14-bit RAW capture
IMAGE STABILIZATION Lens-based
VIDEO TOP RES/FRAME RATE 1080p/60fps
LCD 3.2-in., 1,037,000-dot

SONY A6000

\$698, street, with 16-50mm f/3.5-5.6 OSS lens Small in size but big in power, the a6000 is a great all-around everyday camera that delivers great imaging a very comfortable grip for a rangefinder-style ILC while also capturing very nice looking HD video footage. **STANDOUT SPEC** Lightning-fast autofocus speed for



an ILC and a lovely OLED electronic viewfinder
SENSOR 24.3MP CMOS, 12-bit RAW capture
IMAGE STABILIZATION Lens-based
VIDEO TOP RES/FRAME RATE 1080p/60fps
LCD 3-in., 921,600-dot

A TRIO OF RIVALS

We chose these for comparison because of their similarities in price and capabilities to the Fujifilm X-T10, even though two are DSLRs and one a smaller ILC.

lets you transfer images to your smartphone, but also lets you send pictures to a Fujifilm Instax mini printer for instant prints.

The Bottom Line

You can find a camera that will capture more fine detail, as measured in our lab tests,

CONTINUES ON PAGE 85

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Aspen Photo Art by Larry Bennett

Clear Lake Colorado sets above timberline, about 13,000 ft. close to the old mining town of Silverton. This image is a 7 exposure HDR, shot early morning, in the Summer of 2012, with 24-70mm zoom on a Canon 7D.

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IMAGE BY THERESA THURMAN

BROAD VIEW

A super-fast ultra-wide for Fujifilm X-cam fans

NEW WIDE-ANGLE lenses, both zooms and primes, are flooding into the market this year. Fujifilm leaps in with this fast APS-C-format Fujifilm XF 16mm f/1.4, equivalent of a full-frame 24mm. The water-resistant \$999 (street) lens is meant to partner with the weather-sealed Fujifilm X-T1, a camera that it's well-mated with cosmetically, but we liked it just as well on the X-T10, tested on page 66.

It uses 13 glass elements in 11 groups, including two aspherical and two extra-low dispersion elements to tame ghosting and aberration. Its weather-resistant design has nine sealing points in eight areas, and the lens will keep on functioning in temperatures as low as 14 degrees F. With a close focusing distance of 5.75 inches, it will let you get close to your subjects, too.

Befitting an interchangeable-lens compact system, the new Fujifilm is half an inch shorter and at least half a pound lighter than comparable glass for DSLRs such as the APS-C-format Rokinon 16mm f/2 (which also comes in a Fujifilm X mount) and the full-frame Canon 24mm f/1.4L, Nikon 24mm f/1.4G, and Sigma 24mm f/1.4. Its autofocus is very quick and quiet; while the manual focus ring turns only 150 degrees (an improvement for Fujifilm), the action seemed a bit stiff. This ring also doubles as an MF/AF clutch: Push it forward for autofocus and pull it back for manual focus. The latter reveals orange (feet) and white (meters) focusing scales—very cool. However, when the ring is in the AF position, there's no visual clue

indicating how to switch to manual focus, a common problem with such collars. You'll remember if you use it enough.

The lens has a welcome depth-of-field scale covering almost the entire aperture range. In the hands, the lens has a sturdy, all-metal feel. Its surfaces are attractive, and those markings easily legible.

On our optical bench, the lens showed excellent-range SQF numbers, beating the Nikon and Rokinon with an A+ showing at all but the smallest aperture at 11x14 compared with their scores in the A-range. The Fujifilm also slightly bettered the Canon and matched the Sigma. In our distortion control tests using DxO Analyzer 5.3, it outperformed the competition by an order of magnitude, turning in Imperceptible-range barrel distortion while the others fell in the Slight range. The Fujifilm's edge falloff was also less noticeable.

As if that weren't enough, this new 16mm also had the tightest close-focusing distance of the bunch, a mere 5.75 inches, and it

TEST RESULTS

DISTORTION: 0.08%
(Imperceptible) barrel
LIGHT FALLOFF: Gone by f/2
CLOSE-FOCUSING: 5.75 inches
MAXIMUM MAGNIFICATION RATIO: 1:4.31

SPECIFICATIONS

16MM (16.48mm tested), f/1.4 (f/1.42 tested), 13 elements in 11 groups. Focus ring turns 150 degrees.
DIAGONAL VIEW ANGLE: 83 degrees
WEIGHT: 0.91 lbs
FILTER SIZE: 67mm
MOUNTS: Fujifilm X
INCLUDED: Lenshood, lens pouch
PRICE: \$999, street
INFO: fujifilmusa.com



What's Hot

Well built and sharp, with almost no distortion

What's Not

AF/MF clutch mechanism inadequately marked

Who It's For

Fujifilm X-camera owners who are jonesing for wider angles of view

offered the highest maximum subject magnification, 1:4.31, which should endear it to close-up fans, though it is not technically in the macro range. The runner-up in close-focus was the Rokinon at 7.62 inches; the others focused to 9 inches and more.

This attractive, compact, and optically strong lens falls right in the middle of the pack in pricing. The Rokinon streets at the low end at \$359 in a Fujifilm X mount, but that has no autofocus, only manual, while the Canon and Nikon cost about \$500 and \$1,000 more, respectively, than the Fujifilm. Throw in the improved water resistance on this new lens, and we've clearly got a wide-angle wonder on our hands. —Julia Silber

SUBJECTIVE QUALITY FACTOR

Our standard lens test, SQF rates sharpness by print size

Size	5x7	8x10	11x14	16x20	20x24
1.4	97.2	96.4	94.4	90.3	85.2
2.0	97.4	96.6	94.7	90.9	86.2
2.8	97.7	97.0	95.3	92.1	88.1
4.0	98.0	97.3	95.8	93.0	89.6
5.6	98.1	97.5	96.1	93.5	90.3
8.0	98.0	97.3	95.9	93.1	89.8
11.0	97.5	96.7	94.9	91.4	87.1
16.0	96.7	95.8	93.4	88.7	82.8

16 MM

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SMART CAMERA

A compact that puts smartphones in their place



AFTER THE cheap end of the compact camera market was gobbled up by smartphones, camera makers had to upgrade their fancier compacts to keep ahead of the curve. This typically means 1-inch or larger sensors, fast lenses, and better low-light performance. With the latest iteration of its Cyber-shot RX100, the Mark IV, Sony employs the first stacked CMOS sensor to give this camera's imaging core the most power it's ever had.

The stacked sensor is exactly as it sounds. The imaging sensor sits directly on top of another layer of silicon for processing and DRAM memory. As a result, the camera can pull data off of the sensor five times faster, letting you grab RAW+JPEG bursts at a speed of 16 frames per second at the camera's full 20.1MP resolution, record slow-motion video at up to 960 fps, and shoot 4K video using the full width of the sensor. Plus, the mechanical shutter that tops out at 1/2000 sec is supplemented by an electronic shutter that can now get as fast as 1/32,000 sec.

We wasted no time ushering the \$948 (street) RX100 IV into the Popular Photography Test Lab before taking it out for field testing.

In the Test Lab

While premium compacts can capture significantly more detail than most smartphones, a 1-inch sensor typically can't match an APS-C or full-framer. The RX100 IV earned our second-best rating, Extremely High, in overall image quality from its lowest sensitivity of ISO 80 through ISO 200. Above that point, both resolution and noise degraded too much to maintain the Extremely High rating.

Hues proved just true enough to win an Excellent rating in color accuracy. It scored an average Delta E of 7.7 to land just below our cutoff of 8.

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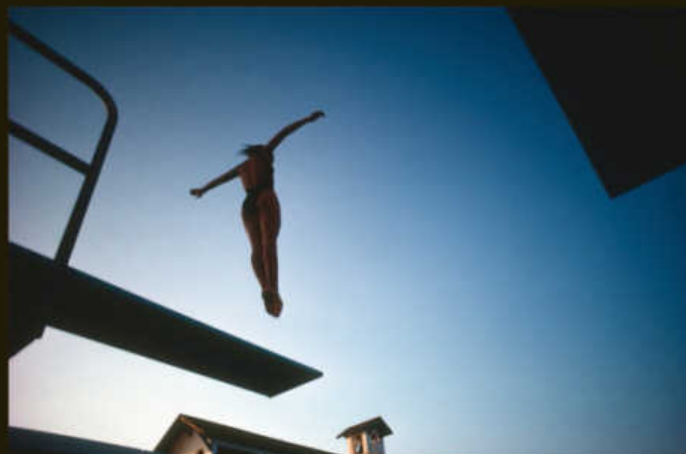
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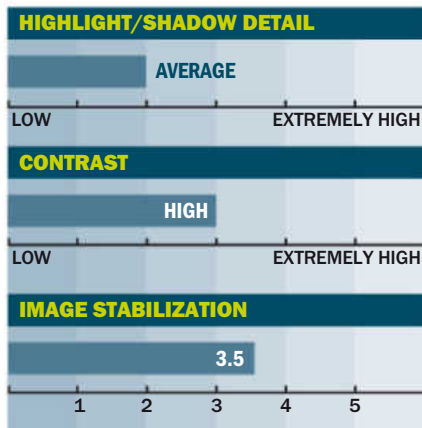
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TEST RESULTS



SPECIFICATIONS

IMAGING: 20.1MP effective, 1-inch (13.2x8.8mm) Exmor RS CMOS sensor captures images at 5472x3648 pixels with 12 bits/color in RAW mode

STORAGE: Memory Stick PRO Duo, SD, SDHC, and SDXC store JPEG, ARW RAW, and RAW + JPEG files

BURST RATE: Full-sized JPEGs (Fine mode), up to 44 shots at 5.5 fps (with continuous AF and metering enabled); RAW, up to 27 shots at 5.5fps

AF SYSTEM: TTL contrast detection with 323 selectable spot areas; single-shot and continuous AF with focus tracking and face detection

SHUTTER SPEEDS: Mechanical: 1/2000 to 30 sec, plus B (1/3-EV increments); Electronic: 1/32,000 to 30 sec

METERING: TTL metering with multi-segment (evaluative), centerweighted, and spot (size of spot unspecified)

ISO RANGE: 125–12,800 in 1-EV increments, plus ISO 80 and 100

FINDER: 0.39-inch, 2,359,296-dot OLED with 100% accuracy; 0.59X magnification (full-frame equivalent)

VIDEO: Records at up to 1920x1080p 60 in AVCHD (at up to 28Mbps); up to 3840x2160p30 in XAVC S (at up to 100Mbps); built-in stereo microphone; no microphone input

FLASH: Built-in pop-up with autoflash covers approx. 1.3–33.5 feet with lens zoomed out to its widest; 1.3–21.3 feet with lens zoomed to telephoto; auto ISO

LENS: 24–70mm (35mm equivalent) f/1.8–2.8 Zeiss Vario-Sonnar T* zoom lens with SteadyShot optical image stabilization

LCD: 3-in. TFT with 1,228,800-dot resolution; five-step brightness adjustment

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PRICE: \$948, street

INFO: sony.net

quite as clean at the lowest ISOs, but from ISO 200 though 3200 it produced slightly cleaner images with a bit less resolving power. The Panasonic was less noisy at all ISOs it shares with the Sony. The Ricoh produced less noise up to ISO 1600, after which the Sony did better, though both were in Unacceptable territory.

In our test of the RX100 IV's image stabilization, our testers managed to get 3.5 stops of shutter speed advantage when handholding with the lens zoomed to its 70mm equivalent.

In the Field

The RX100 IV's body design stays pretty much the same as its predecessor. It lacks a sculpted grip, feeling like a really small Leica, sans vulcanite, in the hand. It retains the pop-up OLED EVF as well as the tiny pop-up flash. The ring on the lens barrel can control any of nine functions. When set to control zoom, it lets you choose between two speeds or opt for step zoom, where it will step between 24-, 28-, 35-, 50-, and 70mm. There's a lot of flexibility in configuring the controls.

The 3-inch LCD can tilt 180 degrees upward to face forward. Wi-Fi lets you trigger the camera with your phone using Sony's PlayMemories Mobile app and

Resolution took a small step above the RX100 II, the last in this series we tested. At ISO 80 the new camera captured 2325 lines per picture height. To compare, Canon's Powershot G7 X, another compact with a 1-inch CMOS, captured 2300 lines at its lowest sensitivity of ISO 125. Panasonic's Lumix LX100, with a larger Four Thirds sensor, got 2375 lines at its lowest sensitivity of ISO 100. And Ricoh's GR, with an APS-C sensor, netted 2425 lines at ISO 100.

As sensitivity climbs, bigger differences emerge. At the RX100 IV's top

ISO, 12,800, it captured 1900 lines, by which point Canon's G7 X had fallen to 1650. The Lumix LX100 turned in 2125 lines at ISO 12,800, though, and at ISO 25,600 still bested the Sony with 2000 lines. The Ricoh GR got 2150 lines at ISO 25,600.

Noise could have been lower, but the Sony did well for a 1-incher. It never beat a Very Low rating and it held a Low or better score only up to ISO 200. Noise rated Unacceptable from ISO 1600 through 12,800, though the numbers didn't hit the stratosphere. Canon's G7 X wasn't

KEY SPECS

SENSOR: 20.1MP Exmor RS CMOS (1-inch)

SENSITIVITY: ISO 80–12,800

BURST RATE: 16 fps

AUTOFOCUS: 323 selectable spot areas

PRICE: \$948, street

INFO: sony.net

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Burst shooting proved solid as the Speed-Priority mode captures a blazingly fast string of images, though with focus and exposure locked after the first frame. The slower 5.5 fps mode also did well: Continuous AF kept up as subjects moved swiftly toward the camera.

Video capture is as intense as you can get in a compact of this size. High-definition footage showed almost no jello effect even with fast-moving subjects, probably due to the greatly increased readout speed of the stacked sensor. Our footage showed plenty of detail, and colors looked very pleasing. We currently don't have a 4K display for critical viewing of 4K video, so we can't accurately judge its quality.

We can assess the slow-motion video, however. Sony calls it High Frame Rate mode, complete with its own HFR spot on the shooting mode dial. In a menu, you select

among capture rates of 240, 480, and 960 fps, then pick from file output frame rates of 24p, 30p, or 60p. By mixing these two options in different ways, you can slow motion by 4 to 40 times. You're limited to capturing 2 sec of footage in Quality Priority mode or 4 sec in Shoot Time Priority mode. When shooting, you place the camera in standby first and then use the movie record button to start or end the shot. The camera buffers the footage and then renders it out in the video format you chose. You end up with a high-def video clip that's much longer than the 2 or 4 seconds of motion you initially captured.

We had a lot of fun using HFR. But the shutter speed necessary for 960-fps capture may require more light or higher ISO settings than normal, which will produce seriously grainy video. Still, we were impressed with the footage we got in bright conditions at lower ISOs.

MORE ON SLO-MO
Shooting in Sony's High Frame Rate mode may net you a phenomena most people can't see unaided—the flicker of fluorescent bulbs, for instance. Play with slow motion and you'll come up with loads of zany video ideas.

It's not quite as sharp as the regular HD, and some artifacts showed up (especially when outputting at 24p), but overall, we were very pleased.

The Bottom Line

The RX100 IV made us feel a bit like Goldilocks. The Ricoh GR costs less and captures more detail, but it lacks a viewfinder, provides just one focal length, and isn't really built for video. The Canon G7 X also costs less, but lacks a finder and cannot match the video acrobatics of the Sony. Panasonic's LX100, again less pricey, probably makes the most compelling alternative since it offers a finder, very similar zoom and aperture ranges, and a unique 4K still capture mode that makes it easy to pull a single frame from your video. It's a tad larger than the Sony, though, and doesn't provide the thrill of slo-mo.

It's nearly a toss up, but if forced to pick one as Just Right, we'd likely go with the RX100 IV. —Philip Ryan

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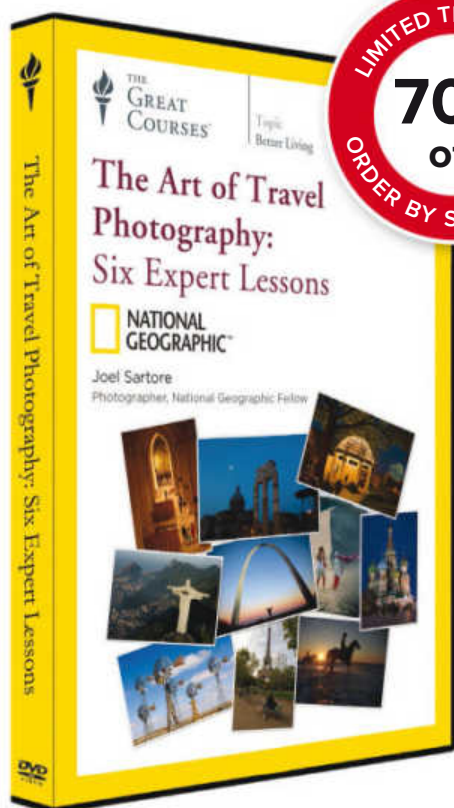
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ABOUT YOUR PROFESSOR

Joel Sartore is a professional photographer and a regular contributor to National Geographic magazine. His assignments have taken him to some of the world's most beautiful and challenging environments and have brought him face to face with a diversity of wildlife in all 50 U. S. states and all seven continents. He was recently named a National Geographic Fellow for his work on "The Photo Ark," a multiyear project to document the world's biodiversity in studio portraits. His photograph of a lion in a tree was voted the best picture by National Geographic magazine in 2011.

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BETTER WIDE

An affordable zoom with super optics

REVIEWING THE original Tokina 11-16mm f/2.8 Pro in 2008, we caviled about its “quite limited” 1.45X zoom range. Someone at Tokina must have heard us, because here’s the new 11-20mm f/2.8 Pro DX wide-angle zoom, a similar lens with a generously bumped out zoom range of 1.81X.

The new APS-C-format lens (\$600, street), in Canon and Nikon mounts, offers an equivalent full-frame focal range of 18-32mm or 17-30mm, respectively. It has three SD glass lens elements for better control of chromatic aberration, an internal focusing mechanism for a stationary barrel—great if you’re into lens accessories such as filters—and a sturdy build.

It feels about average in weight, girth, and length for a wide-angle f/2.8 zoom. At 3.72 inches long, however, when used with the pop-up flash on our Canon EOS Rebel T6s test camera, it was large enough even without the lens shade to cast shadows at all focal lengths and closer focusing distances; at moderate distances (about 10 feet), the 11mm through 16mm settings threw shadows, gone by 20mm.

The lens sports Tokina’s popular push/pull focus clutch: The focus ring pushes out for autofocus and pulls in for manual. We liked the barrel markings (missing in the similar feature on Fujifilm’s 16mm, page 70), which tell you whether the lens is in MF or AF mode. That said, this clutch doesn’t move quite as smoothly as on other Tokinas.

AF action is fast, silent, and accurate. Both zoom and focus rings turn smoothly and evenly, and they’re generously sized and nicely

ribbed and knurled. We liked the manual turning radius of 80 degrees, which lets you go from near to far focus without releasing the ring or stymieing fine control. The numbers are easy to read in the windowed subject-distance scale.

On the optical bench in the Popular Photography Test Lab, the lens turned in Excellent-range SQF numbers for uncompromised sharpness and contrast. In our tests of distortion control using DxO Analyzer 5.3, we found Visible barreling at 11mm (no surprise), but Imperceptible barrel distortion at 16mm and 20mm. These were great results of the kind we’ve come to expect from Tokina, which excels at making wide-angle zooms that practically distortion-free. The lens also did a nice job of smothering edge falloff. At 16mm and 20mm, we saw no vignette. At 11mm, light

TEST RESULTS

DISTORTION: At 11mm, 0.36% (Visible) barrel; at 16mm, 0.05% (Imperceptible) barrel; at 20mm, 0.02% (Imperceptible) barrel
LIGHT FALLOFF: At 11mm, gone by f/3.5; at 16mm, none; at 20mm, none
CLOSE-FOCUSING: 10.66 inches
MAXIMUM MAGNIFICATION RATIO: At 11mm, 1:12.43; at 16mm, 1:9.28 at 20mm, 1:8

SPECIFICATIONS

11-20MM (11.41-19.48mm tested), f/2.8 (f/2.68-2.97 tested), 14 elements in 12 groups. Focus ring turns 80 degrees. Zoom ring turns 50 degrees. Focal length marked at 11-, 14-, 16-, 18-, and 20mm.

DIAGONAL VIEW ANGLE:

104-72 degrees

WEIGHT: 1.35 lbs

FILTER SIZE: 82mm

MOUNTS: Canon AF, Nikon AF

INCLUDED: Lenshood

PRICE: \$599, street

WEBSITE: kenkotokinausa.com



What's Hot
 Sharp, well-built, with a generous zoom range

What's Not
 Focusing clutch action is somewhat clunky

Who It's For
 Canon and Nikon APS-C shooters who want a wider view

falloff was gone by f/3.5.

At \$599, this Tokina offers Canon and Nikon APS-C shooters an ultra-wide zoom with a fast, f/2.8 maximum aperture at a variable-aperture price. And you can't beat its optics.

—Julia Silber

SUBJECTIVE QUALITY FACTOR

Our standard lens test, SQF rates sharpness by print size

Size	5x7	8x10	11x14	16x20	20x24
2.8	96.3	95.2	92.6	87.3	80.8
4.0	96.6	95.5	93.1	88.3	82.7
5.6	96.6	95.6	93.2	88.4	82.7
8.0	96.8	95.6	93.5	89.1	83.9
11.0	96.8	95.5	93.1	88.4	82.8
16.0	96.1	94.8	92.0	86.5	79.8
22.0	95.1	93.6	90.0	82.7	73.6

Size	5x7	8x10	11x14	16x20	20x24
2.8	96.2	95.0	92.2	86.7	79.9
4.0	96.5	95.4	92.6	87.8	81.7
5.6	96.5	95.4	92.9	88.0	82.1
8.0	96.9	96.0	93.8	89.6	84.7
11.0	96.7	95.7	93.3	88.8	83.3
16.0	96.2	95.0	92.3	87.0	80.5
22.0	95.2	93.7	90.2	83.0	74.0

Size	5x7	8x10	11x14	16x20	20x24
2.8	96.1	94.9	92.0	86.1	78.9
4.0	96.9	95.9	93.7	89.5	84.4
5.6	96.9	95.9	93.7	89.5	84.6
8.0	97.2	96.3	94.3	90.7	86.4
11.0	96.9	95.9	93.7	89.6	84.7
16.0	96.4	95.3	92.6	87.7	81.6
22.0	95.4	93.9	90.5	83.6	75.0

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Bold Choice

With a special color issue theme, fashion photographer Sharland—one of the few women in this field at the time—posed redheaded model Elsa Martinelli against a red background in her studio. The result: a dramatic cover that shrieks “color.” Sharland used a 4x5 Graflex D with an 8½-inch Ektar f/6.3 lens at f/8 and Ektachrome Daylight film. She lit the model with an electronic flash.

60 YEARS AGO

“Fred Smith: the nude outdoors,” showed lots of skin under natural light.

Throwback Advertising

Photography was still an infant when Voigtländer introduced its all-metal camera. During the next century, Voigtländer cameras and lenses achieved a sterling reputation for quality, which the company tried to capitalize on in this ad (shown cropped). Alas, its products never seemed to make the splash in the photo market that rivals Zeiss, Kodak, Leitz, and Rollei achieved.



No Flash in the Pan

The joke was irresistible, because this issue celebrated the first photoflash bulb introduced by General Electric in 1930. The safety and convenience of this foil-filled bulb effectively ended the use of flash powder, which required the use of a pan. By 1955, electronic flash had started making flash bulbs obsolete, but we thought even then that a walk down memory lane might be in order.



Shooting the Passing Parade

Looking for new subjects? New York pro Murray Zinn took his Leica and a 135mm Hektor f/4.5 lens plus two reflectors out for a walk. In no time, he found strangers willing to pose. He explained his technique in a bylined article, obviously not directed at shy photographers. —Harold Martin



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SPECIFICATIONS

IMAGING: 16.3MP effective, APS-C-sized X-Trans CMOS II sensor captures images at 4896x3264 pixels with 14 bits/color in RAW mode

STORAGE: SD, SDHC, SDXC slot stores JPEG, RAF RAW, RAW + JPEG files

BURST RATE: Full-sized JPEGs (Fine mode): 8 fps up to 8 shot; RAW: 8 fps up to 8 shots

AUTOFOCUS: TTL contrast and phase detection with 49 selectable focus areas; single-shot and continuous AF with face/eye detection and subject tracking

VIEWFINDER: Eye-level 2.36-million-dot 0.39-inch OLED with 0.62X magnification

SHUTTER SPEEDS: Mechanical: 1/4000 to 30 sec, plus B (in 1/3-EV increments); shutter life not rated; Electronic: 1/32,000 to 1 sec

METERING: TTL metering with 256-zone Multi (evaluative), centerweighted, spot (approximately

2% of the frame at center)

ISO RANGE: ISO 200-6400 (in 1/3-EV increments); ISO 100 and ISO 12,800-51,200 JPEG only

VIDEO: Records at up to 1920x1080p60 in H.264 format; built-in stereo microphone; 2.5mm stereo mic input; maximum clip length 14 minutes at 1920x1080 or 27 minutes at 1280x720

FLASH: Built-in pop-up flash, GN 22 (feet, ISO 200); flash sync to 1/180 sec

MONITOR: Tilting 3-inch TFT LCD with 920,000-dot resolution; 11-step brightness adjustment

BATTERY: Rechargeable NP-W126 Li-ion, CIPA rating 350 shots

SIZE/WEIGHT: 4.7x3.3x1.6 in., 0.9 lb with a card and battery

PRICE: \$800, street, body only; \$1,100 with 18-55mm f/2.8-4 R LM OIS lens

INFO: fujifilmusa.com

CONTINUED FROM PAGE 68

than the X-T10 does for the same price or less. You can also find one in the same price range that holds noise down more, though that's a bit harder. But we haven't touched on the style of shooting that Fujifilm's X-series cameras allow, and this factor really sets them apart.

It's not just that their size and feel evokes classic film cameras. Fujifilm's virtual aperture rings in lenses and its

camera control system that lets you opt for old-school dials or contemporary command wheels lets you shoot any way you'd like—no nostalgia necessary.

If you haven't held an X-series model, go to a camera store and check it out. It may open your eyes to a different way of capturing images—or bring you back to a style of shooting you've missed. We enjoyed our time with the X-T10 and think many of you will too. —Philip Ryan



RACHEL ELIZABETH SEED

LOVE LOST

Intimate portraits of lifelong grieving

MY MOTHER died when I was a baby, and as a documentary storyteller I wanted to explore how others coped with this same loss

so that I could learn to process my own. This was the beginning of *The Motherless Project*, in which I document other women who have lost their mothers at young ages. I made this portrait of Megan F. in Scotland, where

ABOUT THE PROJECT Brooklyn-based Rachel Elizabeth Seed raised money on Kickstarter and traveled the U.S., Europe, and Latin America for *The Motherless Project*.

we met for the first time on the day of the shoot. Intimacy in my work is very important, so I often have my subjects wear or hold something precious to them that belonged to their mother.

—As told to Sara Cravatts

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COLLECTION
TRIPODS | MONOPODS | BAGS



VEO 37
*VEO tripod not included



VEO 235AB

SIGMA

THE GO-GETTER.

A compact, lightweight hyper-telephoto zoom lens featuring outstanding optical performance and optimal portability.

The latest fine lens in our Contemporary line.

C Contemporary

150-600mm F5-6.3 DG OS HSM

Case, hood (LH1050-01) included.
USA 4-Year Service Protection



SIGMA USB Dock

Update, adjust & personalize. Customization never thought possible. Sold separately.

